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THE MEDICAL JOURNAL OF AUSTRALIA.

VOL. I.—5TH YEAR. SYDNEY: SATURDAY, MAY 25, 1918. No. 21.

CLINICAL NOTES ON SYPHILIS.[1]

By L. E. Ellis, M.B., Ch.M. (Syd.),
Sydney.

In this paper I do not intend to go into a detailed account of syphilis. The subject is already well known to the medical profession; besides, there have been no radical changes just recently. The disease is still treated by a combined course of arsenic and mercury, given over a certain period, together with iodides in suitable cases. I wish, rather, to emphasize clinical points that have impressed me, while working in military venereal hospitals for the last couple of years. Unfortunately, there was abundant material to observe. The methods in vogue at these different hospitals, one of which was run by the Royal Army Medical Corps, were in the main alike, and the spirit of Colonel Harrison pervaded all. Still, there were differences in method in different hospitals, leading to different results. For instance, the mortality in one hospital was greater than that in another. One asked oneself the reason. The cause of death was mostly arsenical poisoning, usually manifested as arsenical dermatitis. In the hospital with the lower incidence of arsenical poisoning and death, every case was carefully examined before each administration of arsenic; the body weight was taken, but more important, the urine was examined, and if albumin were found, treatment was suspended pending a full pathological report on the condition of the urine. According to the report, arsenic was discontinued or given in modified or in ordinary dose. It seemed to me that the arsenical poisoning was directly due to the faulty excretion of arsenic, due to faulty kidneys, and that the failure of detection of this, by an examination of the urine, together with the giving of more arsenic, were responsible for an over-accumulation of arsenic, arsenical poisoning and some avoidable deaths. I may add that a considerable proportion of cases under treatment showed albumin in the urine. A falling body weight also indicates caution in the continuation of treatment. Hence the importance of examination of the patient before every administration. Another point; in one hospital the condition of the patients' mouths was worse than in another hospital. The dose of mercury in each was the same, and the methods of administration were alike. The difference was the particular brand of grey oil used. The mouths, in the hospital using a very viscid preparation, were worse than in the hospital using a preparation that required practically no heat to render it of suitable consistency for injection. It was so easy to over-heat the viscid preparation with precipitation of the mercury, resulting in inaccuracy in dosage and incidentally playing havoc with the patients' mouths. Personally, I liked Adams' cream as prepared by Squire, but no doubt there are others as good.

[1] Read at a meeting of the New South Wales Branch of the British Medical Association, on April 26, 1918.

Diagnosis.

Diagnosis must precede treatment; once treatment is started, diagnosis is obscured, and confusion may result, and, may be, the patient gets a course of treatment that he does not need, or *vice versa*. An early diagnosis is of primary importance. As will be pointed out later, the result of treatment of cases in the primary stage is much more satisfactory than that of cases in the secondary stage. Hence the importance of early diagnosis and treatment in syphilis; the earlier the diagnosis and treatment the more certain the result.

The incubation period is an important aid to diagnosis, but is often obscured by multiple coitus. An incubation period of 14 days or over is suggestive of syphilis.

The clinical examination of the patient must be thorough, made in a good light, and with the patient stripped. This examination must include:—

(1) The sore or sores (noting the number, situation and character).
(2) The various groups of lymphatic glands.
(3) The anal region.
(4) The skin and scalp.
(5) The mouth and throat.

The primary sore may be in unusual sites, *e.g.*, within the urethra (intra-urethral chancre), at or within the anus, or in the mouth or elsewhere on the body.

A single sore favours syphilis; multiple sores favour chancroid; but this generalization is by no means absolute, as in about a third of our cases of syphilis, the sores were multiple.

Sores on the shaft of the penis and on neighbouring parts, *e.g.*, abdomen, scrotum, pubes, or thighs, *i.e.*, sores away from their usual site, no matter their character, are nearly always syphilitic (McDonagh says 90%, and our experience agrees with this).

A typical Hunterian chancre is syphilitic, in spite of failure to find the spirochaete; at any rate, we have learned to regard it so, from subsequent developments. On the other hand, an atypical sore is not necessarily non-syphilitic.

Scabies sores may easily be mistaken for venereal sores, and this condition should always be borne in mind.

Slightly shotty inguinal glands are not necessarily syphilitic. Shotty glands elsewhere, *e.g.* in the cervical, mastoid and axillary regions, are suggestive of syphilis, whilst shotty epitrochlear glands, unaccounted for otherwise, are almost pathognomonic of syphilis. I always feel for these shotty epitrochlear glands; their importance in diagnosis cannot well be exaggerated. The more general the shotty adenitis, especially if bilateral, the more likely it is that the condition is syphilis. A matting of the inguinal glands, or a bubo, is more indicative of chancroid or a mixed infection than of pure syphilis.

The anal region frequently harbours condylomata, and these are frequently syphilitic.

The skin should be examined carefully for rashes; the primary sore may have disappeared, but a coppery, macular or maculo-papular rash may clinch a previously doubtful syphilitic diagnosis. Other syphilitic rashes we rarely saw, the early treatment preventing their development.

Similarly, a thorough examination of the mouth may reveal the only, but conclusive, evidence of syphilis, especially in the tertiary stage.

If, after a thorough clinical examination, there be any doubt about the diagnosis, the aid of the pathologist should be called in. If the sore still remains, seek for the *Spirochaeta pallida* by means of dark-ground microscopical examination. The technique for procuring the serum for this examination is important enough to justify some detail. A slap-dash scratch of the, perhaps, ointment-covered sore, and an examination of the resulting blood-stained fluid is no test at all, yet I have seen this done. Technique: Apply a saline dressing to the sore for 48 hours; unless this be done, the presence of mercury, iodoform, or other antiseptic may militate against the accuracy of the finding; cleanse the sore carefully with soap and water; then slightly abrade the surface, preferably towards its edge, and rub briskly with lint soaked in spirit. In a few moments a clear serum exudes, which is drawn into a capillary tube. The microscopic examination, by dark-ground illumination, of fluid collected in this way, is of great assistance in establishing an early diagnosis. If the sores have disappeared, and the opportunity for finding the spirochaetes be passed—although of course they may be found in some secondary lesions—then a Bordet test may be undertaken. For this, however, to be of use, at least 17 days must have elapsed since the onset of the disease; earlier than this the result is unreliable. If a Bordet reaction be doubtful a provocative dose of 0.3 grm. arseno-benzol may be given, and a second Bordet test carried out 24 hours later. The quantity of blood to be drawn from the vein for this examination should be 3 or 4 c.cm. I need not go into detail about this reaction, as it needs a specialist's manipulation.

Treatment.

The primary sore may be excised or cauterized, or mercury in suitable form applied, such as calomel ointment, white precipitate ointment, or the like. Indolent sores may need red lotion, scarlet red, brilliant green, or bismuth powder.

If phimosis complicates, dorsal incision or circumcision may be necessary.

Mucous patches may be painted with a 2% silver nitrate, and a perchloride mouth wash used.

For intra-urethral chancre an iodoform wick is generally satisfactory; if this fails ionization does good.

Purulent syphilitic rashes may need a perchloride bath.

The general treatment consists in the administration of arsenical preparations and mercury. The particular preparation of arsenic did not seem to me to matter. Cases did equally well with arseno-benzol, novarseno-benzol, galyl, or the like, providing the dose were equivalent.

Faulty Drugs. Whatever the preparation used, faulty drugs must be guarded against. It is necessary to inspect each phial; these phials may be cracked, and the contents dangerously altered. All phials with discoloured or altered contents should be discarded. The phials should be immersed in spirit; this, besides sterilizing the outside of the phial, enters any cracks, and causes the contents to adhere to the glass on shaking; faulty phials thus detected are to be discarded.

Only freshly distilled water should be used in making solutions; untoward symptoms follow the use of faulty water. The arseno-benzol must be quite dissolved before the sodium hydrate solution is added, otherwise a more or less gelatinous solution results. Solutions of arsenical drugs must be prepared immediately before use. The arm should be immersed in hot water, if the veins are difficult to detect; the hot water softens the skin and assists in dilating the veins. The veins can be made to dilate much better by an assistant's hands than by a tourniquet. The assistant should obstruct the vein in the upper arm with the edge of the thumb and forefinger of one hand, and massage the veins upwards with the other. I have heard patients cry out with pain from over-dilatation produced in this way; the patient at the same time should clench his own fist.

For syncope during administration (a rare event) the drug should be shut off and caffeine given intramuscularly. Occasionally a patient, during administration, got queer "turns," the face became flushed, and he had a sense of impending doom. These symptoms, however, were rare and of brief duration.

The patient should be instructed to avoid much food before and after administration; an aperient should be given the night before, and no food should be taken for six hours after the administration. The patient should remain in bed for 24 hours. Five per cent. of cases got more or less reaction; this was temporary, and aspirin and rest best relieved the symptoms.

A careful watch should be kept for arsenical rashes; I will speak further in this connexion later.

We used the two glass cylinder apparatus for the administration of arseno-benzol, saline solution being in one and the arseno-benzol solution in the other. The apparatus must be freed from air-bubbles before use. For novarseno-benzol we used a 20 c.cm. syringe, and injected straight into the vein. The injection of any of these solutions into the tissues outside the veins produces intense pain at once, and much subsequent inflammation and suffering. The vein may be fixed by a finger distally; a rolling vein is difficult to pierce. The needle may be passed through the skin only at the first thrust, and then dipped into the vein, or the needle may be thrust directly into the vein at once; boldness and confidence are more likely to succeed than their opposites.

Lately intramuscular injection of novarseno-benzol has been extensively used, and is well spoken

of by Colonel Harrison. We have used it as advised by him, and have found it satisfactory; the local discomfort is greater than that following the intravenous method, but the general reaction is said to be less.

Its administration is perhaps quicker, and needs less apparatus. As the method in its present form is new, I may be permitted to describe it briefly.

The novarseno-benzol is dissolved in a 4% solution of stovaine, and creo-camph-cream (B.W. & Co.) added and well shaken. The detached needle is driven into the muscle vertically to the skin, and the syringe attached and the contents injected. One injection is given weekly for seven doses, totalling 4.2 grm. novarseno-benzol, equivalent to 2.8 grm. arseno-benzol. Harrison's conclusions are:—

(1) The immediate therapeutic effect is greater.
(2) The *Spirochaeta pallida* disappears as rapidly and the positive Bordet reaction more rapidly.
(3) The general reaction is less.
(4) The local reaction is tolerable.

It is difficult, and perhaps unnecessary, to choose between arseno-benzol intravenously and novarseno-benzol, intravenously or intramuscularly; any one of them will do; personally, I prefer arseno-benzol intravenously, providing there be no hurry, but the administration of novarseno-benzol intravenously or intramuscularly is more expeditious where a large number of injections are to be given.

Heroic doses should be avoided, or arsenical poisoning is sure to arise. Moderate, but increasing doses are best. There should always be a good interval between doses; personally I think one dose a week is quite frequent enough. A watch should always be kept on the skin for commencing dermatitis, and the urine examined before every administration.

Not much need be said about the administration of mercury. The mouth should be placed in good order before commencing its administration, and the teeth kept clean during the course. A non-viscid preparation should be used. Local abscesses are best avoided by iodine on the site, absence of mercury on the needle, a quick, deep stab with the detached needle, and a quick withdrawal after the injection is made, and immediate local massage. In this way, the mercury is deposited and distributed well away from the skin, with no mercurial track leading down to it The use of the detached needle also ensures the non-injection of the mercury into a vein. If blood flows, the needle should be withdrawn and re-stabbed.

I have only referred to the intramuscular method of mercurial administration, as that was the only one we used.

The first injection may be 45 mgrs. of calomel, as this has a quicker effect on the lesions than grey oil.

Should stomatitis occur the administration of mercury should be suspended and the local condition treated. Chlorate of potash internally and locally is perhaps as good treatment as any. We gave weekly injections of grey oil, equal to 60 mgrs. of grey powder.

The course of treatment necessary for a cure depends upon the stage of the disease when the treatment is commenced.

A case in the primary stage, before there are signs of generalization, such as rash, etc., is comparatively easy to cure, and a cure can practically be guaranteed after 2.8 grms. arseno-benzol and 0.42 grms. of mercury, taking about six weeks. A case in the secondary stage, or stage of generalization, is more difficult to cure, needs more prolonged and stronger treatment, and a cure is not inevitable; a cure in the majority of these cases is obtained, however, after 4.15 grms. arseno-benzol and 0.66 grm. of mercury. A case in the tertiary stage is very prone to relapse, and treatment is more or less palliative. A negative Bordet reaction should complete each course. In any case the patient must be kept under observation, and periodic Bordet tests carried out for at least a couple of years before all anxiety for the future should cease.

Complications.

Jaundice and arsenical dermatitis were the most frequent complications.

Arsenical dermatitis showed itself, generally, first over the sternum, and spread sometimes with alarming rapidity, and with intense prostration of the patient, often ending in death. I have already spoken of its prevention. If it arises, it must be detected early and the administration of arsenic suspended, and liquid paraffin, or a soothing lotion, applied to the skin. Thus detected and treated, it generally clears up soon. Sometimes, however, it spreads rapidly all over the body in the form of an acute exfoliative dermatitis, with intense prostration, wasting, vomiting, and intermittent attacks of diarrhœa. Bed-sores develope, and death often results.

The treatment we found best was the use of liquid paraffin all over the body, the avoidance of aperients, the feeding up of the patient, and the intravenous administration of brandy, given hot, in a large quantity of water. With this treatment and careful nursing, the skin condition may subside and convalescence set in.

AN INQUIRY INTO SOME RESULTS OBTAINED FROM THE EXAMINATION OF SOME 8,000 MENTAL PATIENTS BY THE BORDET-WASSERMANN TEST.[1]

By Oliver Latham, M.B., Ch.M.,

From the Laboratory of the Lunacy Department of the New South Wales Government.

Since 1910, when the late Dr. Froude Flashman (1) first started the examination of mental patients by the Bordet-Wassermann technique, we have examined, at the Lunacy Department Laboratory, the serum of over 8,000 patients, including those admitted to the metropolitan Mental Hospitals of Callan Park and Gladesville to the number of 6,346 (7 years, 1911-17 inclusive), the last 76 patients admitted to the Mental Hospital at Newcastle, and also

[1] Read at a meeting of the New South Wales Branch of the British Medical Association, on April 26, 1918.

the resident population there on two occasions, 1911 and 1916, involving over 800 more (12). We carried out special, rather than systematic, tests to the number of several hundreds from the Reception House, Darlinghurst, and other mental hospitals. In addition, 230 (2) cerebro-spinal fluids were examined, chiefly with a view of confirming the provisional diagnosis of cerebral lues. A positive result was obtained in over half the cerebro-spinal fluids examined, and the cell count and globulin content examined at the same time practically always corresponded, even when the Wassermann reaction in the serum did not tally.

(1) The Wassermann Reaction in the Serum of Adult Mental Patients on Admission.

The positive and partially positive reactions among some 6,346 patients on admission to Gladesville and Callan Park Mental Hospitals, varied from 10% to 17%. The 1917 Gladesville returns revealed 13% among 445 examined (16½% males and 11% females), or, excluding brain syphilis, 10% of each sex. In 1917 the examination of Callan Park patients similarly gave 15½% among 449 (male 17½%, and female 12%), or, excluding general paralytics, 11% and 11½% respectively. The investigations at both metropolitan hospitals together, carried out in a previous year (3), gave figures which showed that brain syphilis constituted between 5½% and 6½% of the admissions, and accounted for 62% of the total positive Wassermann reactions with serum. At the same time it was found that in 86% of the cases, clinically diagnosed as general paralysis of the insane, evidence of a positive reaction was obtained when the serums were tested. On the other hand a positive Wassermann reaction was obtained with the serum of only 9% of the remaining patients on admission (excluding cerebral lues). In another consecutive series of patients, at the time of admission to the Rydalmere Mental Hospital, 288 samples of serum were examined. Among 218 males (the majority of whom were inmates of Government benevolent institutions), 11% yielded a positive Wassermann reaction, and among 70 females (including many quite young women belonging to the vagrant prison class), 13% yielded a positive reaction. Excluding aments in Newcastle, who give a slightly higher percentage of positive Wassermann reactions with serum, these figures may be taken as typical for the whole State, because they represent four-fifths of the total number of patients admitted to the mental hospitals, and include many country patients.

(2) The Wassermann Reaction Among Other Classes of the Community.

Investigations undertaken in many parts of the world, including some extensive examinations in Melbourne, have shown that the serum of the average hospital patient (always excluding those with manifest signs of lues), their friends (4), and applicants for the public services in London (5) give signs of a positive reaction in numbers that seem to hover round 10%. We may say, therefore, that when less than 10% of any group of patients yield serum which reacts positively, lues can scarcely be regarded as an essential cause of the condition from which they are suffering.

(3) The Wassermann Reaction Among the Resident Population in a Mental Hospital.

In many of the mental hospitals in America and Great Britain, all the persons certified in the district are admitted, and the uncured are permanently retained. In New South Wales, however, on account of numerous transfers, there is no such rule, and to obtain reliable figures under this heading one would need examine especially, at one time, some 8,000 serums. However, Darling and Newcome (6), in a State mental hospital in the United States of America, obtained prior to 1912, a positive Wassermann serum reaction in 5.06% of the resident population, while in 452 patients, admitted consecutively during the following 17 months, 20.4% gave reactions. They explained the difference by stating that most of the positive reactions represent patients with cerebral lues, who will soon die. Again, Lowry (7) examined some 1,600 mental patients, on admission into the Danvers State Hospital, obtaining 16% positive Wassermann serum reactions. About 70% of the male patients, whose serum reacted, were suffering from brain lues, while but 7% of the remainder gave the reaction, figures which compare readily with those we have found in New South Wales. He also found 10% among 100 imbeciles. His figures for the different forms of insanity do not vary sufficiently to be of importance, and that has been our experience too.

(4) The Wassermann Reaction in Amentia.

(*a*) Coming to aments, nearly all the figures concerning these refer to the resident population in contra-distinction to the adult insane figure (admissions). Again, while the latter statistics vary but little, those for aments do so to a remarkable extent, from the 1.5% of Thomsen, etc. (2) (8), among 2,061 to the 42% of Stephens (8) and the 57% of Fraser and Watson, in Glasgow (9). Most authorities, however, find the Wassermann serum reaction in amentia to lie between 8% and 16%. In 1910 and 1916, some 960 aments were examined, including the resident population of the Mental Hospitals at Newcastle, Rabbit Island and Stockton, with the result that over 15% gave a positive, or partially positive, Wassermann (2) reaction. At the latter date, many doubtful cases were re-examined repeatedly, and as a result 18% were considered as yielding a positive Wassermann reaction.

(*b*) The last 76 aments admitted to these hospitals have also been tested, and were found to give a positive Wassermann reaction in 16%. From this, it would appear that however fatal congenital lues may be to infantile and pre-natal life, those that live to take on institutional life (and most aments are kept at home till their teens) do not die off so rapidly as their elder brethren with cerebral lues, who are rarely nursed at home.

(5) Physical Signs of Congenital Lues.

In pre-Wassermann days, some attention was devoted to these signs, which may be enumerated as:—

(*a*) Interstitial keratitis and disseminated choroiditis.

(b) Hutchinson's teeth and supernumerary cusps on permanent molars, and some Moon's teeth.

(*c*) Sunken bridge of nose, snuffles, ulcerated or scarred palate.
(*d*) Severe linear scars about the angle of the mouth, and mucous tubercles anywhere.
(*e*) Protuberant eminences (bosses) from old periostitis, sabre shins and the so-called "syphilitic *facies.*"
(*f*) Deafness, associated with a luetic history.
(*g*) Certain cases of stunted growth, with extreme pallor, and cases presenting developmental anomalies, as "webbed" digits, and very specially the syndrome; juvenile general paralysis, and perhaps some patients exhibiting obscure inco-ordination.

Here, again, authorities differ from the 1% of Shuttleworth (2) among 1,000 aments, Donn's 2%, Piper's 5%, to the 16% of Smalley (10), in 941 imbecile and backward children, at the Borstal Institutions in England.

On a conservative estimate, the examination of our 578 resident aments, in 1916, revealed the more important of these signs in 8%. However, gross luetic stigmata were rarely met with. Of 76 patients, recently admitted, we found these signs in 13%; a negative Wassermann reaction was obtained with the serum of half of these patients, so that from the physical signs and the serum reaction we recognized signs of syphilis in 22½% of our aments on admission.

A careful tabulation of our results does not seem to show that age or length of residence in the institutions in any way varies the incidence of a positive Wassermann reaction (2). In this connexion, we have noted that a patient yielding a negative reaction may subsequently develope interstitial keratitis, or mucous tubercles, and, *pari passu*, a binding reaction in his serum (11).

(6) The Physical Condition of Aments and the Wassermann Reaction.

Many adult insane are physically sound; not so the young folk. Considering as gross lesions such conditions as paralysis, epilepsy, micro- and hydrocephalus, serious eye troubles (16), mongolism (6), squint, defective development (16), or excessive number of digits (15), etc., and indefinite weakness, with inco-ordination and the grosser signs of congenital lues, we find that at least 60% of our resident aments are so affected, and at least 70% of those recently admitted. A table appended shows the incidence of the different conditions, with the percentage of positive Wassermann reactions for the respective groups. The points brought out seem to be the high Wassermann reaction figure in those with serious lesions, and especially the condition "indefinite weakness and inco-ordination," with no apparent cause. We have therefore come to look on this as a sign of lues. Mongolism is generally considered as unconnected with lues, and our figures bear this out, only a few partially positive Wassermann reactions being met with. The same holds good with hydrocephalus, which is probably more often associated with tuberculosis. On the other hand, microcephalus, coming under the definition of stunted growth, might reasonably, at times, be associated with lues. Numerous examples are given by Mott (12), among others, of families with parental lues, where miscarriages, juvenile general paralysis, epilepsy, doubtfully healthy children, and then weaklings, and even healthy children follow one another, especially after irregular anti-luetic treatment. Hyde (13) tells us that out of 134 children born of parents, one or both of whom were luetic, only 10% gave a positive Wassermann reaction, and these latter never had good health. It was found that among the remaining 103, whose serum was negative, the majority were below par physically, and probably mentally as well.

In this connexion, Dr. Nowland, at Callan Park, while carrying out the intensive treatment of cerebral lues, examined other members of the families of many of his patients, and in many instances discovered a positive Wassermann reaction, indicating a luetic taint in them also, a condition of affairs often quite unrealized by the relatives. Again, believing that the spirochaete might team in other glands besides the liver, and cause damage there, Dr. Prior, at the Rydalmere Mental Hospital, examined the serums of some 15 patients subject to some glandular dystrophy, but a positive Wassermann reaction was not obtained in a single case. The patients, however, were over middle life.

(7) Summary.

Whatever percentage of positive Wassermann reactions be obtained for any group of aments, they will probably be too small as an indication of a luetic taint, for these reasons:—

(1) Patients giving a positive Wassermann reaction to-day may lose it in a few years, or less. Dean maintains it tends to disappear, after 19 years of age, in congenital lues (14).

(2) All syphilitic patients do not necessarily give a positive Wassermann reaction, even when exhibiting gross signs of congenital lues (14).

(3) Patients negative one time may, concurrently with some outburst of lesions obviously specific, develope a positive Wassermann reaction.

(4) Positive evidence in the cerebro-spinal fluid sometimes coincides with a negative Wassermann reaction in the serum, or the reaction may be brought out by a provocative "606" injection.

(5) Certain aments, with either indefinite or negative signs of lues, yet may have close relatives, aments like themselves, and the only clue to their condition may be the luetic history of their parents. The parents may have been under specific treatment when the ament is born (13).

(6) The infection may have done its damage, passed away, and left no other trace of its presence, but the amentia and some tiny scars, at present invisible to most of us.

(7) Lastly, we must not forget that certain degrees of amentia are not readily recognizable in infancy; mothers hope the child is but backward, and thus some luetics die, perhaps of some intercurrent disease, and their lues remains unrecognized, or at least uncertified.

On the other hand, we must recognize that:—

(1) Lues, when present, may not be the cause of the amentia. Figures up to 10% of a positive Wassermann reaction found in many otherwise normal classes (4).

(2) Many of the patients, on admission, were old enough to have acquired the lues after birth and before admission. In many large cities there are special wards for the treatment of gonorrhœa in the very young.

(3) Institutions vary greatly as to the class of aments they cater for, and in this respect we feel justified in putting forward ours as being among the most comprehensive, as practically every certified ament in the colony passes through our hands. However, some of the older and more intractable aments find themselves transferred to another hospital, and were all these included, our figures might show a smaller incidence of a positive Wassermann reaction. However, some of our aments have been inmates over 40 years, and their serums give strongly positive Wassermann reactions, the test having been repeated five or six times. Partial reactions should always be repeated, and this was done before the result was finally accepted.

We are of opinion that the best results would accrue from examining all aments on admission, and re-examining them at five yearly intervals till their twentieth year. These figures would lie between 10% and 20%, but even then would not reflect the total taint of lues in amentia. We still do not know how far syphilis is responsible for amentia.

(8) Addenda.

The original Wassermann technique was used,[1] 3 and 6 more units of complement being used over and above the minimum hæmolytic dose, while the extract was one we have used many years, and proved to be very reliable. Lately, we have controlled the results with guinea-pig heart-cholesterin antigen, due allowance being made for this antigen's property of binding complement. For cerebro-spinal fluids we used two and five times the amount of fluid to be tested, as compared with serums, always putting up a control without antigen, as the latter amount often bound by itself. Cerebro-spinal fluids that coagulated on inactivating, were employed again without inactivating, as we found the coagulation destroyed the positive reaction. Other tests have indicated that this finding is probably correct. For counting cells, we used a white cell pipette, using 10 parts of fluid to one part of the following stain: Methyl violet 0.2 gm., glacial acetic acid 4.0 gm., formalin 1 c.cm., and water to 100 c.cm., and an ordinary hæmocytometer. Over 5 cells to the cubic mm. were considered abnormal. A white ring within two minutes, on floating a little cerebro-spinal fluid over a saturated solution of ammonium sulphate, indicated a positive globulin test.

Table Showing the Different Pathological Conditions of Aments with Associated Wassermann Reaction and Clinical Luetic Stigmata.†

	Resident Population.					Recent Admissions.				
	Number Examined.	% on 578.	Pos. W.R. %	Clinical Luetic Stigmata.	Corrected Ttl. Luetic Incidence.*	Number Examined.	% on 76	Pos. W.R. %	Clinical Luetic Stigmata.	Corrected Ttl. Luetic Incidence.*
Total aments examined..	578	—	18%	8%	23%	76	—	16%	13%	22½%
Normal	233	40%	7%	—	—	23	30%	13%	—	13%
Pathological	345	60%	22%	—	—	‡53	‡70%	‡17%	‡13%	‡22½%
The Pathological Conditions Further Considered.										
Paralysed (including squint, a few cases of) ..	99	17%	17%	11%	18%	15	19%	—	—	—
Indefinite weakness or inco-ordination ..	13	2%	30%	8%	38%	8	10%	50%	—	—
Epilepsy	102	17½%	17%	4%	21%	‡30	‡40%	‡20%	‡4%	‡23%
Microcephalics	17	3%	30%	12%	30%	2	—	—	—	—
Hydrocephalics	16	3%	12%	—	12%	1	—	—	—	—
Mongols	39	6%	5%	2%	7%	6	8%	0	0	0
Defective development or extra digits, etc.	—	—	—	—	—	6	8%	—	—	—
Old severe blepharitis or loss of eye	25	4½%	16%	16%	16%	7	9%	—	—	—
Syphilitic stigmata as enumerated	44	8%	§34%	—	—	10	13%	50%	—	—

* In this column the addition is due to cases of clinical lues not giving a positive Wassermann reaction.
† Some conditions are naturally included several times, *i.e.*, an epileptic may also be paralysed.
‡ Including those that have ever had a severe fit resembling epilepsy.
§ Over 50%, if we include some whom we have had under observation over 7 years, and who, giving a negative Wassermann reaction to-day, once reacted positively.

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PATHOLOGY IN WAR-TIME.[1]

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The gradual increase in the utilization of pathologists in the British Armies is a good example of the growth in efficiency of the Army Medical Service as a whole.

The 1st Australian Division landed in Egypt without trained pathologists or equipment. The civil laboratories in Egypt were doubtless expected to do the work, but very little work could be done at all by the overworked medical officers of these departments. Outbreaks of diarrhœa were common amongst the troops during the four months preceding Gallipoli. The troops frequented bazaars and eating places, where the food was probably infected by natives. I have little doubt that large numbers of dysentery and enterica carriers were amongst our own troops when we landed at Gallipoli, and suitable conditions alone were required to start an epidemic of any intestinal infection against which we were not immunized. We had only been inoculated against enteric fever; therefore we had an epidemic of dysentery and of the two paratyphoid fevers. If pathologists had been organized at the beginning and had investigated the intestinal troubles that existed amongst our troops in Egypt, I feel sure that by detection and segregation of carriers and by being forewarned against what we might expect if our sanitary conditions became bad, Gallipoli might have been a different story. The blame can, I suppose, only be laid at the door of the British War establishments, in which pathologists or pathological equipment found but little place. In the first year of the war the British Army suffered very heavily, particularly in Gallipoli, from infections of a preventible character, and it was the Gallipoli campaign in particular that opened the eyes of the War Office to the importance of pathologists in the diagnosis and prevention of disease. Committees of experts were sent to Gallopili, Salonica, Mesopotamia and Egypt; the Army Medical Service and the civilian medical service were ransacked for trained men; and the equipment and staff of laboratories were increased and improved wherever possible.

In France similar improvements were made, but being nearer home and in a cold climate, the failure of the Medical Service under the old establishments was never brought home so grimly as in the eastern theatres of war. At the present day in France and England, the pathological work of the Army is carried out as follows. To each Army front is allotted one or more mobile bacteriological laboratories. These units consist of a bacteriologist, a trained attendant, a motor driver, and a car with body fitted up as a laboratory, small but compact and very serviceable. The bacteriologists, as a rule, during stationary warfare, back their car up against a casualty clearing station, take their equipment out into a hut and travel around to field ambulances and casualty clearing stations, collecting specimens by motor bicycle or a small car. On the lines of communication and at the bases the pathologists are part of general and stationary hospitals, and have now very well equipped laboratories. In England the laboratories of civil hospitals have been utilized very widely, and nearly all the pathologists in England are doing either routine war work or research work in connexion with the war.

I would like to take one subject of pathological interest as an example of the work that has been accomplished, and will choose cerebro-spinal meningitis. With the advent of large numbers of recruits to camps and barracks, early in 1915, some anxiety was caused by outbreaks of this disease, and the Medical Research Committee, which has from time to time during the war given invaluable advice and assistance on special subjects to the Director-General of Medical Services at the War Office, provided the services of Dr., afterwards Lieutenant-Colonel, M. H. Gordon, Assistant Pathologist at St. Bartholomew's Hospital, to superintend the scientific measures to be taken. The subject was tackled in a very systematic manner. The whole of England was divided up into 37 districts from the point of view of cerebro-spinal fever, and in each district was started or taken over a cerebro-spinal fever laboratory. A central laboratory was established in London. Bacteriologists and assistants were specially trained for this work in the central laboratory, and the special media and apparatus required were supplied direct from the central laboratory. Researches were set going at once on various problems in connexion with this disease, and Lieutenant-Colonel Gordon and his assistants have done very great service during the war to medicine and to the Army. In the first place, a reliable culture medium for the meningococcus was prepared and issued to the district laboratories. First of all nasgar (nutrose-ascitic agar) and later pea flour (trypagar) were used. Pea flour was introduced in May, 1915, after the supply of nutrose had become exhausted. The new medium proved itself a satisfactory substitute for nasgar.

Then a special instrument was found to be necessary for taking cultures from the naso-pharynx in suspected carriers, and West's swabs were supplied in all centres. This instrument is so constructed that the swab is protected until the tip lies in the naso-pharynx. On withdrawal the swab is again sheathed, and therefore does not come into contact with the saliva. As is well known, saliva exercises an inhibitory effect on the meningococcus.

All contacts of patients suffering from cerebro-spinal meningitis were isolated and their naso-pharynx swabbed. They were not set free till they had been found to be free of the meningococcus. Many different Gram-negative cocci are found in the naso-pharynx. The means commonly used to distinguish them are:—

(*i.*) Appearance of the colonies.
(*ii.*) The failure of the meningococcus to grow at 23° C..
(*iii.*) The fermentation by the meningococcus of glucose and not of saccharose.

Research into the agglutination properties showed that there were no less than four distinct serological

[1] Read at a meeting of the New South Wales Branch of the British Medical Association on April 26, 1918.

types of meningococci, though all the types were alike in cultural characteristics. These types were called types I., II., III. and IV., and with some difficulty specific agglutinating sera were prepared from rabbits against each of them. Emulsions of each of the four types and their homologous antisera were prepared at the central cerebro-spinal fever laboratory, and were sent out to the district laboratories, so that each medical officer might investigate and give information as to which type was prevalent in his district. Gordon found that the meningococcal serum, then on the market, would not agglutinate properly the type of coccus isolated from the cerebro-spinal fluid of patients under treatment at the time. He formed the opinion that as the antiserum was not doing much good to the patients, this was due to the fact that the disease occurring was caused by a type of coccus different from that from which the antiserum had been prepared. Later on multivalent antiserum was prepared from a mixture of Lieutenant-Colonel Gordon's types, and the results of treatment have been more promising than before.

Eighty per cent. of the cases were found to be due to types I. and II., and the remainder to types III. and IV. There is, however, considerable variation in different epidemics in the percentage of the various types. It has been found that there is a striking similarity in the proportion of each type occurring in cases of cerebro-spinal fever and in the contacts associated with the patients. For example, in a garrison an epidemic occurred in which the relative percentage of the types was as follows:—

Type I.	Type II.	Type III.	Type IV.
23%	38%	—	38%

Upwards of 1,000 contacts were examined and 193 carriers were detected, in whom the types were as follows:—

Type 1.	Type II.	Type III.	Type IV.
17%	41%	—	40.5%

Another fact that was brought out was that in a case of cerebro-spinal meningitis the same type was invariably found in the naso-pharynx as in the cerebro-spinal fluid and in some cases in which the diagnosis was apparently indefinite, the type of meningococcus isolated from the naso-pharynx was noted, and if the disease did not develope, the specific serum was then made available at an early stage of the disease, when a very favourable prognosis could be given. It was found in one series of cases that when the specific serum was given on the first, second or third day, the death-rate was 9%, while when it was given later than the seventh day it rose to 50%.

Carriers were found to harbour only one type of meningococcus at a time. Several persons have been under observation for long periods, even up to 15 months, and the same type of meningococcus was found at each examination. There was no evidence to support the view that one type is more persistent in the naso-pharynx than any other type. That is to say, one type has not been found to change into another, either in the naso-pharynx or in culture media. Their specific agglutination properties remain the same after repeated subculture for long periods.

Another result confirmed was that the percentage of true meningococcus carriers amongst troops is high, even amongst non-contacts in non-epidemic areas. The average was about 2%, while amongst contacts about 8% might be expected. The average period during which isolation is necessary was found in one investigation of 185 carriers to be 4½ weeks.

In the short time at my disposal I have given you a very brief and incomplete summary of the work done in this section of pathology. The pathologists of Great Britain are now very adequately mobilized, and they have more than proved their value to the British Army.

AGGLUTINATION AFTER THE ADMINISTRATION OF TYPHOID AND PARA-TYPHOID VACCINES.[1]

A Thesis presented for the degree of Doctor of Medicine.

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(*Continued from page* 410.)

Relation between Typhoid and Paratyphoid Inoculations and Infections in Stimulating the Production of Agglutinins.

Martin and Upjohn (1916) (*loc. cit.*), in a number of cases of paratyphoid fever, found that a progressive development of typhoid agglutinins preceded by one or two weeks the development of agglutinins to the paratyphoid bacillus. They also found that infection with one of the paratyphoid organisms stimulated the production of typhoid agglutinins early in the disease, and it was not until the third to the fifth week that the titre for the infecting organism rose to 1 in 100.

In order to throw some further light upon the interpretation of the rise in typhoid agglutinins in paratyphoid infections, they inoculated healthy persons, some of whom had previously received antityphoid vaccine, with paratyphoid A and B bacilli. In about half of those who had been previously inoculated this was followed by the considerable development of typhoid agglutinins. But in those that had not been previously inoculated, no typhoid agglutinins were found. They suggest that in an uninoculated person the mechanism for the manufacture of typhoid agglutinins being already laid down, the introduction of paratyphoid organisms stimulates this mechanism to further activity.

They found that occasionally the development of agglutinins to *B. paratyphosus A* was slight and transient.

Glynn and Lowe (1916) (25) found that, in individuals inoculated against typhoid, who subsequently were infected with paratyphoid bacilli, the early disappearance of the paratyphoid "infection agglutinins" was in marked contrast with the comparative persistence of the "inoculation agglutinins" of typhoid vaccinations. Paratyphoid A, but not paratyphoid B, raised the titre of the typhoid inoculation agglutinins, and this raised typhoid titre persisted, though the paratyphoid titre fell. The paratyphoid A titre averaged a lower level than that of paratyphoid

B. Co-agglutination between paratyphoid A and paratyphoid B did not occur. Typhoid infection or vaccination, producing titres of 250 to 5,000, did not cause paratyphoid agglutination.

Donaldson and Clark (1916) (26) state that paratyphoid infections raise the typhoid titre in inoculated persons, by stimulating the agglutinin-forming mechanism, which has previously been called into being by a preventive typhoid inoculation. The stimulus effect, however, appears to vary according to the nature of the paratyphoid infection. The paratyphoid A stimulus is probably less in amount or more transitory in its effect than that of paratyphoid B. They were unable to obtain any clear evidence of co-agglutination of paratyphoid A for paratyphoid B, or *vice versa*, and they saw no evidence of *B. typhosus* evoking co-agglutinins for paratyphoid organisms.

Ainley Walker (1916) (27) states that the effect of paratyphoid infection on the typhoid agglutinins of individuals inoculated with typhoid vaccine is either to leave the typhoid titre unchanged, or to produce a rise of greater or less degree. This agrees with what has been familiar in animals for a number of years. Thus, if an animal which has been immunized some weeks or a month or two before with a particular micro-organism, be inoculated with a non-lethal dose of a vaccine prepared from some other micro-organism, its agglutination titre for the first micro-organism exhibits a new, rapid rise of greater or less extent, and pursues a curve similar to the ordinary inoculation curve. If, however, a longer period has elapsed, for example, five months or more, before the heterologous inoculation is given, there may be no change of any kind in the agglutination titre, though, whenever any change at all does actually occur, its main feature is a rise in titre.

Dreyer, Gibson and Ainley Walker (1916) (28) found that paratyphoid B fever commonly causes a rise in the typhoid agglutinin titre, which is often considerable. This effect, however, they found less common in paratyphoid A infections.

Author's Experiments.—Table XIII. illustrates the effect of injections of paratyphoid vaccines in stimulating agglutinins to typhoid and paratyphoid bacilli.

No. 82 was a returned soldier. He had suffered from typhoid fever eight years previously, and fifteen months before this investigation he received four injections of typhoid vaccine. At about the same time that he received the typhoid vaccine he was inoculated against other diseases, including dysentery and cholera. All these injections were administered within one month. In no case did a marked reaction follow. After the injection of mixed paratyphoid A and B vaccine, the clinical reaction was again a mild one. Further, the typhoid agglutinins in his blood serum remained at the same level throughout the entire investigation, and no paratyphoid agglutinins were developed.

No. 83 presents a marked contrast to No. 82. The clinical effects produced by the injection of the mixed paratyphoid A and B vaccine were very severe. The redness and swelling at the site of inoculation in the upper arm spread to involve the upper third of the forearm, and he suffered from rigors on the night following the injection.

Paratyphoid B agglutinins were the earliest to be developed. They first appeared on the eighth day, attained their maximum on the ninth day, and remained at the same height throughout the remainder of the investigation. No paratyphoid A agglutinins were present at any time.

Typhoid agglutinins first appeared on the ninth day. This is later than is usually the case after an injection of typhoid vaccine. They rose fairly rapidly, attained their maximum (1 in 1,000) between the fourteenth and seventeenth days, and remained there during the next two weeks. The course followed by the typhoid agglutinins in this case is similar to that found after injections of typhoid vaccine.

Table XIV.

Table XV. illustrates the same effects as Table XIII., but the vaccine used in this experiment was different from that used in Table XIII. The doses were small. Only 100 million paratyphoid A., and 100 million paratyphoid B. were injected. The clinical reaction was mild in each case.

No. 72.—The reactions of this person to injections of typhoid vaccine are recorded elsewhere (Table IX., Chart IV.). No effect was produced by this injection of paratyphoid bacilli on the typhoid agglutinins, as they continued the gradual fall that would have been expected apart from this injection. Paratyphoid B. agglutinins were developed, but only in slight degree. They first appeared on the seventh day. Paratyphoid A. agglutinins were not met with.

No. 84 had never had typhoid fever or any inoculation. No typhoid or paratyphoid A. agglutinins were formed, but paratyphoid B. agglutinins were developed slightly better than in case 72, though they made their first appearance a day later.

The same two persons, as in Table XIV., were given larger doses of the same mixed paratyphoid vaccine, because it was thought that the small size of the dose employed in Table XIV. might account for the feeble agglutinin response. All the emulsions used in this test were different from those used in Table XIV., so that detailed comparison of the results obtained cannot be made.

No. 72, in spite of the larger dose, developed no paratyphoid agglutinins at all. The typhoid agglutinins appear to have risen slightly, but the rise was hardly appreciable.

No. 84 again failed to produce typhoid agglutinins, but paratyphoid A. and paratyphoid B. agglutinins were both developed, though the latter were less abundant than in the previous table.

Table XV.

No. 72 had previously ingested typhoid vaccine, as recorded in Table XI. The single dose of mixed paratyphoid A. and B. vaccine had no effect on the typhoid agglutinins, and paratyphoid agglutinins were not developed.

Table XIII.—Para. A. and B. vaccine I. { Para. A. emulsion I. / Para. B. emulsion I. / B. typhosus emulsion II.

Number.	Age in Years.	Weight in Pounds.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
82	22	147	13.11.'16	+ 1 in 200 90 secs.	—	—	250 Para. A & B
83	22	152	13.11.'16	—	—	—	250 Para. A & B

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
82	20.11.'16	+ 1 in 200 120 secs.	—	—	Nil	21.11.'16	+ 1 in 200 120 secs.	—	—	Nil
83	20.11.'16	—	—	—	Nil	21.11.'16	—	—	+ 1 in 10 50 secs.	Nil

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
82	—	—	—	—	—	23.11.'16	+ 1 in 200 100 secs.	—	—	Nil
83	22.11.'16	+ 1 in 10 60 secs.	—	+ 1 in 100 70 secs.	Nil	23.11.'16	+ 1 in 50 60 secs.	—	+ 1 in 100 90 secs.	Nil

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
82	—	—	—	—	—	—	—	—	—	—
83	27.11.'16	+ 1 in 500 80 secs.	—	+ 1 in 100 120 secs. (trace)	Nil	30.11.'16	+ 1 in 1,000 70 secs.	—	+ 1 in 100 120 secs.	Nil

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
82	4.12.'16	+ 1 in 200 80 secs.	—	—	Nil	14.12.'16	+ 1 in 200 70 secs.	—	—	Nil
83	4.12.'16	+ 1 in 1,000 60 secs.	—	+ 1 in 100 100 secs.	Nil	14.12.'16	+ 1 in 1,000 50 secs.	—	+ 1 in 100 90 secs.	Nil

No. 82 had typhoid fever eight years ago, and was inoculated against typhoid fever fifteen months ago.

Commentary.

Of these five persons who received mixed paratyphoid A. and B. vaccines, two (Nos. 83 and 84) had never had typhoid fever or previous inoculation. Of these two, one (No. 83) produced abundant typhoid agglutinins, and he was the only one of the five to do so. In addition he developed paratyphoid B., but not paratyphoid A. agglutinins. The other (No. 84) produced paratyphoid A. and B. agglutinins only.

The remaining three individuals had previously received typhoid vaccine, Nos. 72 and 82 by hypodermic injection, and No. 78 by oral administration, consequently the sera of all three showed the presence of typhoid agglutinins to begin with. In none of them, with the possible exception of No. 72, did paratyphoid injections cause any rise in the titre of typhoid agglutinins.

These cases are too few in number to justify any conclusions being drawn, but it would seem that injections of paratyphoid vaccine may in some cases stimulate the production of typhoid co-agglutinins. The injection of typhoid vaccine, on the contrary though it causes the serum to agglutinate typhoid bacilli in dilutions as high as 1 in 5,000, apparently does not stimulate the development of any paratyphoid co-agglutinins, for such sera, as shown in the note to Table VI., do not agglutinate paratyphoid bacilli even in dilutions as low as 1 in 10. On the whole the agglutinin response to the paratyphoid vaccines used by me was much less marked than that stimulated by the typhoid vaccines.

Effect of Age on Agglutinin Production.

It was found from a study of the tables that age, like body weight, is no guide to the intensity of the agglutinin response likely to be met with after typhoid inoculation.

Table XIV.—Para. A. and B. vaccine II. { Para. A. emulsion II. / Para. B. emulsion II. / B. typhosus emulsion III.

Number.	Age in Years.	Weight in Pounds.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	22	147	4.12.'16	+ 1 in 500 110 secs.	—	—	200 Para. A & B
84	21	135	4.12.'16	—	—	—	200 Para. A & B

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	7.12.'16	+ 1 in 500 120 secs. (trace)	—	—	Nil	8.12.'16	+ 1 in 200 60 secs.	—	—	Nil
84	—	—	—	—	—	—	—	—	—	—

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	11.12.'16	+ 1 in 200 60 secs.	—	+ 1 in 10 120 secs. (trace)	Nil	12.12.'16	+ 1 in 200 60 secs.	—	+ 1 in 10 80 secs.	Nil
84	11.12.'16	—	—	—	Nil	12.12.'16	—	—	+ 1 in 10 60 secs.	Nil

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	14.12.'16	+ 1 in 200 60 secs.	—	+ 1 in 10 80 secs.	Nil	—	—	—	—	—
84	14.12.'16	—	—	+ 1 in 50 60 secs.	Nil	—	—	—	—	—

Number.	Age in Years.	Weight in Pounds.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	22	147	18.1.'17	+ 1 in 50 45 secs.	—	—	500 Para. A & B
84	21	135	22.1.'17	—	—	—	500 Para. A & B

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	25.1.'17	+ 1 in 100 120 secs. (trace)	—	—	Nil	1.2.'17	+ 1 in 100 120 secs. (trace)	—	—	Nil
84	25.1.'17	—	—	—	Nil	1.2.'17	—	+ 1 in 100 120 secs. (trace)	+ 1 in 20 70 secs.	Nil

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
72	7.2.'17	+ 1 in 100 120 secs. (trace)	—	—	Nil	—	—	—	—	—
84	7.2.'17	—	+ 1 in 100 120 secs. (trace)	+ 1 in 20 100 secs.	Nil	—	—	—	—	—

Table XV.—Para. A. and B. vaccine II. { Para. A. emulsion III. / Para. B. emulsion III. / B. typhosus emulsion III.

Number.	Age in Years.	Weight in Pounds.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
78	21	140	18.1.'17	+ 1 in 20 120 secs. (trace)	—	—	250 Para. A & B

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
78	25.1.'17	+ 1 in 20 70 secs.	—	—	Nil	1.2.'17	+ 1 in 20 120 secs. (trace)	—	—	Nil

No.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.	Date.	Ty.	Para. A.	Para. B.	Dose in Millions.
78	7.2.'17	+ 1 in 10 120 secs. (trace)	—	—	Nil	—	—	—	—	—

(To be continued.)

Reviews.

THE BIOLOGICAL ASPECTS OF WARFARE.

If Dr. Harry Campbell were quite unknown, his monograph on the biological aspects of warfare[1] would stamp him as a man of reflection, one whose special delight is to twist and untwist biological tangles. It is a sequel to his other philosophical discourses on matters concerning evolution. Most of the contained statements may be said to be simple truisms; they are of that kind, however, which most of us pass by without seeing; therefore merit is won by revealing them, and more by thoughtful presentation, in a frame of graceful language.

The opening thesis is that the combative instinct is a normal mental attribute, *vide* the special weapons of offence and defence with which animals are universally endowed. And the emotion most deeply-rooted in the fighting instinct is anger, upon which follow spite, vindictiveness and actual revenge. The factors which have most favoured the evolution of the instinct are the desire for reproduction, the struggle for food and intertribal warfare. The ultimate effect of these factors has been to make man, of all vertebrates, the most inveterate fighter. Not only does he wage incessant warfare on other species, destroying infinitely more than any other vertebrate, but he also fights persistently with his own, so differing from all other species.

A man's conduct, both towards his fellows and the lower animals, has two justifications, or sanctions—the sanction of might, expressed in the phrase "might is right," and the sanction of altruism. And it is a sad truth that sheer might, untempered by consideration for others, operates with inexorable effect throughout the whole organic world. Happily, however, there are some checks to its operation. Of these, the most effective is the altruistic prompting that leads parents to protect their own offspring. Next comes gregariousness, whose object is mutual help—the presentation of a united front. Then, as a last phase of social evolution, we have Government protecting the individual. It so comes about that to-day civilized man revolts against the unbridled exercise of might. Where, formerly, tribes injured their neighbours by pillage, murder and the like, regarding them with suspicion and animosity, we have international agreements and obligations, becoming more and more binding as civilization advances. But to this ideal state war is an awful stumbling block. There could be no greater contrast than that between the ethical standard prevailing within a State and that existing between States at war. In the one case, the motto is "Let justice be done though the heavens fall," in the other, justice is cast to the winds.

War in earlier times has been regarded as eugenic, because the ablest survived. Modern war, with its mechanical slaughter of the best and fittest, is strongly dysgenic; it is said that the Napoleonic struggles took five centimetres off French stature. And yet to the individual, war has its benefits. Military training, discipline, the apprehension of danger, and other stimuli, lead to the wakening of latent possibilities undreamt of in the easy-going times of peace. Again, though the horror of the present war is only equalled by its inanity, nature forces upon us the contradiction that the state of peaceful quietude in which we picture the lion lying down with the lamb, is far from ideal. A community long lulled in ease, is bound to deteriorate, because all healthful life implies struggle. The vital international want is some adequate stimulus which shall take the place of war. To name the stimulus is impossible; it may come with enlightenment. Lack of enlightenment, even tragic ignorance on the part of the rulers of the Central European Empire, has made them guilty of one of the greatest blunders as well as one of the greatest crimes in history.

Dr. Campbell dreams that better things may come with the development of a moderate, sane socialism, and the establishment of a United States of Europe. There have been dreams that have come true.

[1] The Biological Aspects of Warfare, by Harry Campbell, M.D., F.R.C.P.; 1918. London: Baillière, Tindall & Cox. Demy 8vo., pp. 44. Price, 1s. net.

The Medical Journal of Australia.

SATURDAY, MAY 25, 1918.

The Public Health.

The final report of the Committee appointed by the Department of Trade and Customs to investigate the causes of death and invalidity in the Commonwealth contains recommendations aiming at the better protection of the public health. The Committee have arrived at the decision that the duty of maintaining an effective central health authority belongs to the State Governments; that there should be in each State a definite Minister of Health with a highly qualified permanent officer, who should be given adequate authority and assistance to enable him to carry out the administration and supervision and to conduct health research and emergency work. Each State should be divided into districts and each district should be under the supervision of a whole-time medical inspector. The municipal councils should be responsible for the maintenance of health in its area and should carry out this work through the agency of a medical officer of health. The Federal Government should assist the State Governments in their endeavour to improve the health of the community. One of the means of assistance should be the attempt to secure uniformity in the health laws throughout the Commonwealth. The Committee conclude by proposing that the Federal Government might offer to bear part of the expense of maintaining district medical inspectors and further that it might invite at its own expense an annual conference of the health executive officers of the several States with the Director of Quarantine. These recommendations are the practical outcome of the enquiries which the Committee have recorded in eight progress reports, each of which has been discussed in these columns during the past two years.

It will be admitted that the Committee has made out a good case for reform. In each report, a considerable amount of irrefutable evidence has been adduced to show that the knowledge possessed at the present day is not being used to good advantage in preventing ill health, incapacity and premature death. It has also been demonstrated that no adequate efforts are being made to increase our knowledge of hygiene and preventive medicine, and no progress can be expected as long as the present system is continued. From time to time we have ventured to criticize the findings of the Committee, because it appeared that some of the contentions were exaggerated and some were based on assumption and not to proven facts. Be this as it may, the indictment against the existing administration of the public health laws and against the provisions for the protection of the community is amply supported by the records published in this journal each year. There is at the present moment a growing demand for a better control of health. It is true that this demand has taken weird shapes and has been expressed in disguised phrases, but it is unmistakably present. It has been seriously suggested that the remedy for the defect in the machinery for improving the health of the community lies in a State control of medical practitioners and the provision of free medical attendance to all citizens. It is difficult to see how this alteration would act as a remedy. If the attendance given to patients by medical practitioners while their employment is voluntary and subject to the choice of the individual patient, is unsatisfactory, it is unlikely that it would be better were the practitioner compelled to serve the public at a fixed salary. There is no reason to believe that an appreciable proportion of the community in the Commonwealth is unable to command medical attendance when it desires it. It is not in this direction that a need for reform exists. It may be that a general raising of the standard of scientific efficiency is possible and that it would be to the advantage of the public if the average medical practitioner were better equipped or gave better value for the money paid to him. The real defect does not lie in the machinery for coping with disease manifest in individual persons. It lies in the lamentable failure to apply measures of prevention. The community has a right to demand that all the available knowledge concerning preventive medi-

cine should be applied for the common good. It is possible to arrest a tubercular process in the lungs of one person, but the gain from an economic point of view is relatively small. The gain to the community if the incidence of consumption can be reduced by one half, is almost incalculable. On these premises it is possible to suggest a remedy which in a relatively short time would make itself felt throughout the whole community. There must be a radical reform in regard to the measures aiming at the prevention of disease. Half measures are dangerous, because the effect is too slow. The proposals of the Committee sound excellent, but in practice they would lead to the perpetuation of the majority of the old mistakes. The principle is wrong. The Committee would have the unit of health administration the councils of the municipalities. These councils are composed of the wrong people; experience teaches that the local health authority will never move until the superior authority threatens heavy penalties and even then, necessary action is frequently left unperformed. It has been urged in these columns on several occasions that the principle of decentralization in matters appertaining to preventive medicine leads to inequality and failure. Why should the people in one State suffer because the permanent health officer is less active, less advanced or less efficient than the permanent health officer of another State? The utilization of health programmes for political purposes is too common in State affairs to render this sixfold control reasonably safe. If progress is to be aimed at and if there is to be a uniform application of effective measures of prevention of disease, there must be centralization. In other words, the first step of the remedy of the present defect is the surrender of the legislative rights by the States and the transference of the control to the Federal Government. All health legislation would be applicable throughout the length and breadth of the Commonwealth and the responsibility for enforcing each and every measure aiming at the improvement of the public health would be vested in the one central health authority. The administration would necessarily involve a certain degree of restricted local autonomy, and no better proposal could be put forward than that of the Committee of district inspectors and local medical officers of health. The central authority, or the deputy in each State, or the district inspector might have power to compel the municipalities to pay for work carried out in their areas, but under no circumstances should the municipal councils have power to determine the way in which the work is to be performed, or to exercise any discretion concerning the advisability of acting on the recommendations of the medical officers of health or the district medical inspectors.

The next link in the chain of health control should be the medical practitioners throughout the country. Unless a system of co-operation exists between the health authority and the practitioners in each area, failure must result from the attempt to prevent disease. Since the whole community is concerned, it is reasonable to suggest that the whole medical profession should participate in the effort. At present the only contribution of the general practitioner to the cause of preventive medicine is to be found in the notification of certain infective diseases. For this he receives fees for work done. There should be an extension of this principle. Members of the medical profession should be called upon to aid in the eradication of disease. The duties would be light but nevertheless important. They might be limited by regulation, so that each practitioner would be able to anticipate the amount of work that would be required of him by the State. Whether these services should be paid by salary or otherwise is immaterial as far as the scheme is concerned.

It may be objected that the remedy roughly indicated would involve a revolution too drastic, too abrupt and too little considerate of vested interests to be practicable. It is undoubtedly revolutionary; but what of that? If there is need for a change, the more complete, the better. There can be no compromise in the prevention of disease. The existing system has been tried and has failed. No amount of modification will make the faulty principle on which it is built, anything but faulty. If it is recognized that the public health is not being properly safeguarded, neither the reluctance of a State Govern-

ment to reliquish its rights, nor the vested interests of individuals, nor the fear of a violent transformation will deter the community from insisting on the introduction of a thorough reform. Some revolutions are intrinsically bad; this one represents the only rational means of applying knowledge uniformly for the good of the people of Australia.

THE ANTISEPTIC PROPERTIES OF CERTAIN DYES.

The relationship between chemical constitution and pharmacological action has long been recognized, and has formed the basis of nearly all modern investigations in pharmacology. Similarly, Ehrlich and others have conducted numerous researches aiming at the determination of the action of definite groups in chemical compounds on bacterial growth. Ehrlich first pointed out that methylene blue exerted a selective action on some bacteria and tissues, and it was soon established that this action could be increased at will by the employment of substitution products. Dr. I. J. Kligler has endeavoured to ascertain by a close study of the antiseptic action of the various members of the triphenylmethane dyes how far the chemical constitution of the individual dyes influenced their specific action.[1] His technique was well planned, and care was taken to maintain the strictest uniformity possible. He was prevented from extending the list of substances on account of the difficulty of obtaining them during the course of the war. He found that aniline or its mono- or dimethyl derivatives possessed but slight inhibitory action on the growth of selected Gram-negative and Gram-positive organisms. The introduction of a methyl group into the nucleus resulted in an increased action. Thus the corresponding toluidine derivatives possess distinct inhibitory action. When one methyl or ethyl radical is substituted for one atom of hydrogen in the NH_2 group, a further increase takes place. Generally the ethyl group proves more valuable than a methyl group. The position of these groups is also of importance. Judging in perspective he comes to the conclusion that the inhibiting effect of these dye stuffs is due on the one hand to aniline with the benzene nucleus as its basis, and on the other to the number of these nuclei. Methyl alcohol in a dilution of 1 in 10 exercises an inhibitory action on *Bacillus aerogenes*, *bacillus coli* and other Gram-negative bacteria. Aniline acts similarly in a dilution of from 1 in 250 to 1 in 450. The inhibitory action is stronger on Gram-positive organisms. Passing up the scale, it is seen that the weakest dilution capable of exercising an inhibitory effect on Gram-negative bacteria in the case of ethyl aniline is 1 in 1,000, in the case of dimethyl aniline is 1 in 1,350, and in the case of diethyl aniline is 1 in 4,500. The toluidine compounds with the methyl groups in the ortho position act more energetically than those with the methyl group in the para position. Quinoline has a considerably less marked action than quinaldine. Still further up the scale auramine is shown to be less active than fuchsin, while malachite green acts on both Gram-negative and Gram-positive bacteria in high dilutions. Victoria green and crystal violet are very active, but are far less so than brilliant green, which inhibits the growth of Shiga's dysentery bacilli in dilutions of 1 in 2,000,000 and *Staphylococcus aureus* in dilutions of 1 in 4,000,000. A curious exception to the rule is met with in the case of methyl green, which has a relatively low inhibitory power. Methyl green is practically identical to crystal violet, save that one of the tertiary nitrogen atoms of the dye is changed as a quarternary salt by the addition of methyl choride.

[1] *The Journal of Experimental Medicine*, April, 1918.

Naval and Military.

CASUALTIES.

In the 400th list of casualties, which was issued to the public on May 17, 1918, the official record of the death from wounds of Major James Beverley Metcalfe, M.C., is included. The previous report indicated that this brave officer was severely wounded. In the same list there is an entry to the effect that Captain Melrose Holtom Mailer has been wounded (gas). The 401st list of casualties was issued on May 20, 1918, and contains a large number of names. Captain Stuart Galloway Gibson, M.C., is reported to have been wounded (gas) for the second time.

We regret to record the death in action of Major Cedric Alwyn Stewart.

APPOINTMENTS.

The following notice appears in the *Commonwealth of Australia Gazette*, No. 71, of May 16, 1918:—

Royal Australian Naval Brigade.

The appointment of the following officers as Acting District Naval Medical Officer, Sydney, and Assistant to District Naval Medical Officer, Sydney, respectively, are terminated as on the dates shown.

Surgeon Albert Wallace Weihen, Acting District Naval Medical Officer, Sydney. 20th May, 1917.

Surgeon Frederick Glover Neason Stephens, Assistant to District Naval Medical Officer, Sydney. 16th August, 1916.

RED CROSS APPEAL.

The following is a list of medical practitioners who have responded to the appeal made by the Victorian Division of the Red Cross Society, and of the amounts contributed:—

	£	s.	d.
Mr. G. A. Syme	100	0	0
Dr. and Mrs. J. Dunbar Hooper	25	0	0
Dr. J. A. Scott	25	0	0
Dr. F. W. W. Morton	20	0	0
Mr. R. Hamilton Russell	20	0	0
Dr. S. Docker Read	15	0	0
Dr. and Mrs. W. E. Drake	10	10	0
Dr. W. Atkinson Wood	10	10	0
Dr. A. Yuille	10	0	0
Dr. Frank Andrew	5	5	0
Dr. Henry Howard	5	5	0
Dr. W. Ernest Jones	5	5	0
Dr. J. A. Kennison	5	5	0
Dr. T. W. Sinclair	5	5	0
Dr. F. H. Langlands	5	0	0
Dr. E. H. Embley	2	2	0
Dr. Murphy	2	2	0
Dr. Drane	1	1	0
Dr. Wilkinson	1	1	0
Dr. H. L. Murray	1	0	0
Dr. P. Wisewould	1	0	0
Dr. Deane	0	10	6
Dr. H. Herlitz	0	10	0

Abstracts from Current Medical Literature.

SURGERY.

(181) Gun Shot Wounds of the Knee Joint.

A hundred consecutive cases of gunshot wounds of the knee joint are reported by E. Tissington Tatlow (*Brit. Journ. of Surg.*, January, 1918). Some of the patients arrived several days after injury with retained projectiles and with or without fractures. The question as to whether or not the foreign body should be left alone depends on its size and situation. A foreign body deep in the bone with a quiescent joint can be left alone, but when the foreign body is in the joint or projecting from a bone cavity, it should be removed. As a rule it should be removed at once. The track should be excised, the body removed, its cavity flushed out, bismuth-iodoform-paraffin paste introduced, the capsule sutured and the entire wound closed. If there is an associated bone injury, the bone is gently curetted and more of the bismuth paste introduced. In general arthritis of streptococcal origin, the author recommends resection, as these cases do badly with posterior joint drainage. The resection includes the patella, but all the synovial membrane possible is left as a protective barrier. Bismuth-iodoform-paraffin paste is used, extension applied and a gauze pack introduced between the bones. After from three to ten days, depending on the condition of the patient, the pack is removed under nitrous oxygen anæsthesia, and the bone surfaces allowed to come together. Sometimes irrigation is necessary after removal of the pack. Osteomyelitis has not supervened in any of his cases. Acute arthritis of staphylococcal origin is easily and successfully treated by simple drainage. If there is a bone lesion the Carrel-Dakin technique gives the best results. *B. perfringens* infections of the joint are also very amenable to treatment, and usually, after removal of the foreign body and lavage, the joint can be sutured. Aspiration, in the author's hands, has given bad results. Absolute immobility is an essential in all forms of treatment, and the fewer dressings the better. Starting pains at night are an indication for tightening up the extension.

(182) Septicæmia in Gun Shot Wounds.

In a study of septicæmia occurring in gunshot wounds, H. M. Anderson and G. Richardson (*Brit. Journ. of Surg.*, January, 1918) point out (1) the diversity of the organisms causing the septicæmia, (2) the variations in the clinical picture, and (3) the complete absence of symptoms in some cases in which living organisms have been found in the blood. In septicæmia, due to the *bacillus perfringens* of Welch, three main types occur, one of fulminating character with rapidly spreading gas gangrene and profound toxæmia; a second also fulminating, but without gas formation; and a third, of mild character with some local gas gangrene, which follows a favourable course. The streptococcal septicæmia falls into three varieties, also: an acute form with hyperpyrexia, delirium and fatal result; a chronic form with profound anæmia and emaciation; and a mild form with few clinical symptoms. The appearance of the wound in streptococcal septicæmia is extremely dirty, grey stringy sloughs being present, which do not leave a clean raw surface on removal. There is also an absence of pain and of reaction. This type of wound is named "cadaveric," but is not peculiar to streptococcal infections alone. Septicæmia due to the bacillus of malignant oedema is extremely rare, and still more unique is the case of septicæmia due to a pneumobacillus. The treatment in these septicæmias consists in the intravenous injection of eusol and of saline solution, in the transfusion of blood, and in the application of autogenous vaccines. Of these the first mentioned may be the most effective of an exceedingly doubtful armamentarium.

(183) Actinomycosis of the Colon.

A case of actinomycosis of the colon is discussed by Albert Ochsner in the *Surgical Clinics* for December, 1917. A man who had previously passed a large quantity of blood and pus, developed symptoms of chronic intestinal obstruction. Colonies of the ray fungi were found in the pus, and a tumour mass was palpable to the left of the umbilicus. An ileo-sigmoidostomy was performed and the patient was treated with potassium iodide. Ochsner recommends that this should be be given in 5.5 gramme doses every eight hours for four days. A week's interval is then allowed to elapse and then the course repeated. He insists that the iodide should not be given continuously. The actinomyces are notorious for their avoidance of lymphatics, and they rarely spread by the blood stream. The infection extends by continuity and contiguity of tissues. Distant metastases are not likely to occur, so that generalized actinomycosis is, unlike generalized tuberculosis, a rare condition. Abdominal and laryngeal actinomycosis are generally secondary to oral actinomycosis, while the pulmonary form may be secondary to the oral infection, or may follow abdominal actinomycosis by extension through the diaphragm.

(184) Acute Non-perforative Peritonitis.

C. Bennett reports (*Clin. Journal*, January, 1918) three cases of non-perforative peritonitis which show some unusual points. The first was in an unmarried female of 24 years, who was admitted to hospital for sudden acute abdominal pain, which suggested the perforation of a gastric ulcer. The appendix and both appendages were normal, and there was no lesion in the upper part of the abdomen. A thin purulent fluid was present in the peritoneal cavity; on examination it was found that the fluid contained gonococci. A swabbing from the cervix also revealed the same organism. The interesting part of the case lay in the fact that the pelvic organs were apparently normal in a fulminating case of gonococcal peritonitis. In the second case, a boy who had been admitted after a kick from a horse in the thigh and abdomen. When the abdomen was opened it was found that he had a torn mesentery, with rupture of the glands on the right extremity of the root of the mesentery. Nothing further was done, and after being nursed in the Fowler position, the patient recovered. The third case was that of a child who had been admitted for vomiting which had lasted three days with slight pain. The abdomen was found to be full of pus, without any leakage being discovered from any organ. The child died, and culture revealed pure streptococci. A post-mortem examination failed to reveal the causative lesion.

(185) Gunshot Wounds of the Abdomen.

Fifty cases of penetrating gunshot wounds of the abdomen, occurring in civil life, are reported by M. Goltman (*Surg. Gynec. and Obstet.*, February, 1918). Thirty-two of these died, a mortality of over 60%. The points the writer seeks to make are: (1) that shock is a contra-indication to immediate operation; (2) that in the majority of cases when the shot passed through the solid organs, especially the liver, the wound should be left alone. In reference to the existing shock, Goltman remarks that, hæmorrhage being absent, if the patient makes no appearance of rallying from it, then operation with the added shock of surgery offers little hope. The difficulty of distinguishing between shock and the effect of hæmorrhage is admitted, but the writer relies on the restlessness which usually accompanies hæmorrhage, while in shock the patient is usually listless. Another difficulty is in deciding whether or not a hollow viscus has been perforated. It is suggested that an exploratory puncture should be done under local anæsthesia, a general anæsthesia being given immediately if a lesion be found. The writer also advocates the introduction, into the puncture wound in the bowel, of concentrated Epsom salts in order to obtain an early evacuation, and thus prevent intestinal paresis.

GYNÆCOLOGY AND OBSTETRICS.

(186) Endometritis.

A. H. Curtis (*Surg. Gynec. and Obstet.*, February, 1918) has undertaken a combined bacteriological and histological study of the endometrium in health and disease. He first summarizes the recent literature on the subject, and remarks that (1) the majority of the histological

changes attributed to endometritis are merely monthly cyclic changes. (2) Mysterious bleeding from the uterus, unless caused by tumours of the products of pregnancy, is chiefly due to disturbed function of the ovaries and not to endometrial conditions. (3) With the exception of the gonococcus and the tubercle bacillus organisms are rarely found in the uterine cavity except in very acute cases. He then proceeds to give the results of his own investigations on 118 uteri removed at operation. He classifies his cases into four groups: (1) The endometrium of nulliparæ without a history of a previous infection. Out of 26 examinations the tissues were normal and the attempts to grow organisms negative in 23. In one case streptococci were isolated, and in two in which curettage had been performed eight or six days before hysterectomy, a mixed growth was obtained in culture and there was histological evidence of endometritis. (2) Endometrium of nulliparæ with a history or gross evidence of pelvic infection among 13 cases no growth was obtained in 12. Histologically normal conditions were met with in nine cases, tuberculosis was present in one, a slight cellular infiltration was noted in a second case, and in a third there was invasion by polynuclear and plasma cells. The remaining case, in which there was a history of recurrent infection of 16 years' duration, yielded gonococci in culture and histological evidence of endometritis. (3) The endometrium of parous women without a history or gross evidence of pelvic infection, of 47 cases bacterial infection was detected in two. One of these patients had a preliminary intrauterine treatment; the other suffered from persistent uterine hæmorrhage, and the organism proved to be an anaerobic streptococcus. (4) The endometrium of parous women with a history or gross evidence of pelvic infection, of 32 cases nine showed growth. Four of these, regularly exposed to reinfection, yielded gonococci giving rise to a subacute endometritis. Gonococci from the endometrium and tube were recovered in another patient. In two a diplococcus and a streptococcus were discovered. Ten endometria without bacterial infection proved normal, two contained round cells, one a postmenstrual polynuclear increase, in seven plasma and round cells were seen, and in three there was distinct histological evidence of endometritis. Thus, from his experience, the microscopic evidences of endometritis coincides quite well with the results of bacteriological investigations. The bacteria disappear first, followed in turn by the polynuclear leucocytes, plasma cells and other mononuclear cells in the order named. In conclusion he states that the cervical canal should be painted with iodine before introducing an instrument into the uterus, for this canal is freely accessible to all vaginal flora. The ideal time for operation would appear to be at the close of menstruation, as there then persists a polynuclear leucocytosis available for aid in convalescence. Intrauterine therapy is dangerous and of little avail, as chronic infection of the *corpus uteri* leads almost certainly to involvement of other pelvic organs. Most infections and discharges come from the cervix, and thus treatment up to the internal *os* alone is required.

(187) Pregnancy and Pulmonary Tuberculosis.

Morris and Landis (*Journ. Amer. Med. Assoc.*, February 9, 1918) give their conclusions on pregnancy and pulmonary tuberculosis, based on a report of 103 cases. They state that the combination of pulmonary tuberculosis and pregnancy is a frequent one, and that the latter disease exerts little or no influence on conception, and that it has little influence on the course of pregnancy, except in the advanced stages, when it exerts little or no influence towards causing abortion, miscarriage or premature labour. Twenty per cent. of the mild quiescent and 70% of advanced cases of tuberculosis exhibit exacerbations during pregnancy or puerperium. They are against tuberculous women marrying, except when the pulmonary lesions have been quiescent for a long period, and are of opinion that they should not become pregnant unless the disease is in the first stage or has been quiescent for two years. It is impossible to determine with certainty which patients will bear the added strain of pregnancy well and which badly. Laryngeal involvement, loss of weight, hæmorrhage, etc., are ill omens. Prior to the fifth month the uterus should be emptied if the disease becomes active, the disease in 70% of such patients improves. Late imtervention has given less satisfactory results, and after the fifth month it is generally advisable to treat these patients expectantly. Labour should be made easy, and therefore induction of premature labour two weeks before term is often advisable. The infants should not be nursed by tuberculous mothers. Any pregnant woman giving a history at all suggestive of pulmonary tuberculosis should be thoroughly examined and kept under observation.

(188) Fibroids and Pregnancy.

Bethel Solomons (*Trans. Roy. Acad. of Med. Ireland*, Vol. XXXV., 1917) raises a few points on the question of fibroids complicating pregnancy, which occurred to him whilst operating during the past few years. In regard to the first question: "Does myomata cause sterility?" he has come to the conclusion that when a myoma causes sterility it is usually sub-mucous in type, but myoma is one of the least frequent causes of sterility, which is usually due to tubular diseases, misplacements, etc. The next question which presents itself is in regard to possible pregnancy after myomectomy has been performed. He is of opinion that if the edges of the wound are carefully approximated with No. 4 catgut, confinement may be approached with confidence, even in cases in which at least one-third of the cavity has been taken away with the tumours. The reason why he uses iodine catgut instead of silk, as in the case of Caesarean section, is that in the myomectomy there is no involution, and if the operation is properly performed, the uterine wound should heal up by first intention, whereas in the latter case a great strain is placed on the sutures. The next question is: "When pregnancy occurs in a myomatous uterus, what is the result?" It is well known that the tumours usually hypertrophy during pregnancy. Abortion or premature labour may terminate the pregnancy, incarceration or gangrene may occur, or red degeneration. The rational treatment of these things can be summed up in a few words: (1) If the tumour is likely to give trouble during parturition it should be extirpated; (2) if not, it should be left alone. Finally he cites a case to illustrate that multiple fibroids complicating pregnancy usually require hysterectomy. In discussion, Sir William Smyly said that it was generally believed that myomata usually caused sterility; still there were no statistics to prove it. Alfred Smith was also of opinion that fibroids undoubtedly had some influence in causing sterility, but not so much as was generally supposed. Operation during pregnancy had no terrors for him if the proper time was selected. Spencer Sheill said that great care should be taken in explaining to women the results which follow hysterectomy. Solomons was also of the opinion that the after effects of operations which involve removal of important organs, should be carefully explained to the patient.

(189) Tuberculosis of Genital Organs.

Spencer Sheill (*Trans. Roy. Acad. of Med., Ireland*, Vol. XXXV., 1917) reports an interesting case in which the tubercle bacillus was transferred from husband to wife. Former had proven tuberculosis of the kidney, which was removed, and deposits in right seminal vesicle and epididymis. Five weeks after marriage his wife developed a tender and painful swelling in groin (syphilis and gonorrhœa were eliminated), with tenderness in the right fornix. Von Pirquet's test proved positive. A hypodermic injection of tubercle bacilli gave elevation of temperature and local reaction in glands. The author is of opinion that the case opens the question of State interference on the subject of marriage of the tubercular. It forms food for thought on the part of medical men consulted by a tubercular person contemplating marriage. In the discussion, Sir William Smyly said he did not believe that infection could be caused in this manner, as the current in the genital canals was in an outward direction, and it did not seem possible that the organisms could be carried upwards by spermatozoa. He believed that tuberculosis of the uterus and tubes was always secondary. Tweedy stated that primary tuberculous ulceration of the cervix was not unknown, and why should not this occur by coitus. Sheill asked, in reply, why tubercle bacilli could not ascend in the same way as gonococci.

British Medical Association News.

SCIENTIFIC.

A meeting of the New South Wales Branch was held at the B.M.A. Buildings, 30-34 Elizabeth Street, Sydney, on April 26, 1918, Dr. A. A. Palmer, the President, in the chair.

Dr. L. E. Ellis read some clinical notes on syphilis (see page 427).

Dr. H. S. Stacy stated that in France there was relatively little venereal disease among the troops in the front line. The infections were nipped in the bud. The patients had to disclose the source of infection, and it was then possible to remove an infected woman from the environment of the camp.

Dr. E. H. Molesworth expressed surprise that Dr. Ellis had come across so much arsenical dermatitis. He assumed that this was caused by the necessity of rapid treatment and early evacuation. The doses of the arseno-benzol drug were given too frequently. When these drugs had first been introduced they had been frightened, and had given them in small and infrequent doses. Later, after they had made the experience that no untoward reaction followed, they gave a dose once a week, and as a result dermatitis developed not infrequently. Since then they had been more cautious, and had given up the frequent injections, and skin complications of the treatment had disappeared. At times it might be desirable to give two or three injections at weekly intervals, but it was dangerous to repeat them more often. Dermatitis could be avoided by watching carefully for the first signs of an involvement of the skin and immediately discontinuing the arsenic. He was very pleased to hear Dr. Ellis insist on the necessity of a routine testing of the urine before giving arseno-benzol. In his opinion there was only one serious contra-indication to the use of this drug. This was nephritis. Nearly all the fatal results were caused by the use of the drug in patients with damaged kidneys. He referred to the diagnosis of the primary lesion, and expressed disappointment at the fact that Dr. Ellis had not laid more stress on the pathological signs. An early diagnosis was required before the secondary lesions appeared. At the Royal Prince Alfred Hospital venereal clinic soft sores were rare. The differential diagnosis between hard chancre and an ordinary sore, often a herpes, which had been enthusiastically treated by caustics and the like, was often not easy. He was always desirous of having the diagnosis confirmed by the discovery of the *Spirochaeta pallida*. He admitted that if the pathological examination proved negative, and the clinical appearances were characteristic of the disease, he would not hesitate to start the treatment. In the next place, he raised the question whether local treatment was necessary. He was inclined to the opinion that the patients got on just as well without local treatment. He employed chlorate of potash for its action on the mouth while mercury was being given, but no other local remedies. It was his experience that it was not difficult to get the tissues to heal without them. In regard to the arsenic drugs, he admitted that he was prejudiced in favour of the arseno-benzol group, as against the novarseno-benzol group. He was quite satisfied with the intravenous application of these drugs, and held that there was no reason to be afraid of it.

Dr. Archie Aspinall said that he had seen a considerable number of soft sores at the Sydney Hospital. Many of these sores were of the phagedænic type. The practice he followed was to send down every case for pathological examination. Dr. Ellis had advocated that every syphilitic patient should have his mouth put in order before the treatment was started. He had found that there was considerable difficulty at general hospitals in persuading the patients to undergo dental treatment. The dentists did not like the work, and this increased the difficulty.

Dr. C. Norman Paul called attention to the colour of the rash in the early stage of syphilis. According to the textbooks, it was supposed to be of a coppery colour, but close observation showed that at first the eruption was very pale and distinctly pinkish in hue. He was of opinion that soft sores were very rare in Sydney. As a rule the soft chancre became a hard or infective sore after a short time.

Dr. Ellis was not convinced that Dr. Stacy was correct in stating that venereal infections were few in Flanders. He recalled to his mind that there were several large hospitals reserved for these diseases, and that they were always full. It was quite true that there had been a decrease in the number of venereal infections among Australian troops. Colonel Millard had been very pleased with the improvement. He agreed with Dr. Molesworth that it was advisable to apply arseno-benzol in infrequent doses. He held that it was good policy to employ arsenic in increasing doses, and as the size of the dose was increased, it was necessary to prolong the intervals between the individual doses. While he valued the pathological diagnosis very highly, he was quite prepared to accept a clinical diagnosis in typical cases. In these cases the pathological examination was not essential. In reference to the frequency of soft and hard sores, he pointed out that when the Australians first landed in Egypt, the soft sore infections represented 98% of all venereal diseases. Later, after the soldiers had infected the natives with syphilis, the prevalence of the infecting chancre increased. In spite of what Dr. Molesworth had said, he still thought that local remedies were useful in accelerating the process of healing in many cases. It might be that the action was more apparent than real, but local applications certainly seemed to do good. In military practice the patients were paraded before the dentist and those who required it received dental treatment. The result was that there was very little stomatitis. Dr. Paul had called attention to the pink colour of the papules at the earliest stage. He was quite prepared to admit that the papules were more pink than copper coloured, but the principal characteristic was their syphilitic appearance.

Dr. A. H. Tebbutt read a paper entitled "Pathology in War Time" (see page 433). Before resuming his seat he referred to the measures which had been adopted for the treatment of the meningococcal carriers. Numerous antiseptics had been tried, including eusol. It had been found that the best results were obtained with chloramine-T (2%), with a 1.2% solution of zinc sulphate. The solution was sprayed by means of a steam spray or atomizer in an inhalation chamber. The patients stayed in as long as they could stand the vapour. One litre was sprayed in from 15 to 20 minutes. The results were satisfactory.

Dr. H. S. Stacy corroborated what Dr. Tebbutt had said concerning the great advances made in the British Army during the war in the domain of pathology. The work had been carried out by keen and competent bacteriologists. In Flanders a mobile laboratory was attached to each army. While he was there the work had been carried out in his district by the Canadian Army Medical Corps. The specimens were collected, and after they had been examined, the result was telephoned to the clearing station. He was convinced that this prompt method had been the means of saving many lives. Dr. Stacy referred to the special discussions on epidemic cerebro-spinal meningitis that had taken place at the meetings of the medical officers attached to the Second Army. Many of these meetings were large gatherings of medical and combatant officers from generals down to lieutenants. At his hospital they had made a post-mortem examination on every case. In this way valuable observations had beeen made, and at times these observations had had an intensely important practical value in regard to treatment. He instanced the cases of gas gangrene. By studying the post-mortem appearances, they had discovered that the infection involved single muscles or particular groups of muscles, and the surgeons thus obtained an indication of the best means of dealing with the affection. The specimens had been carefully preserved and sent to Professor Keith, the Curator of the Museum of the Royal College of Surgeons. After the war the collections would be sent to Australia, and would figure in the museums of the Australian universities.

Dr. Stacy spoke of cases of cerebro-spinal meningitis of a septicæmic type. These cases were very virulent, and usually ran their course in from 18 to 24 hours. Examination after death had revealed that there was frequently hæmorrhage of the adrenals. Turning to chest cases he laid great emphasis on the advisability of inserting a needle into the pleura, so that the effused blood might be examined bacteriologically. If the fluid were infected, the condition was treated surgically. He was convinced that this pro-

cedure was quite sound, and had saved many men from prolonged illness and death. In conclusion, Dr. Stacy referred to the fact that there was no bacteriological or pathological laboratory in the Australian Army.

Dr. E. H. Molesworth remarked that he was not surprised to hear Dr. Ellis give preference to chloramine-T rather than to eusol. Eusol was very fashionable, but many had given up using it because it was too irritating. Fomentations containing eusol often gave rise to dermatitis. He suggested that many other of the newer antiseptics were equally irritating. He instanced flavine.

Dr. Archie Aspinall recounted his experience, when on active service, of the pathological work. Although orders were issued to trace the spread of typhus, it had been impossible to carry them out because there were no facilities available.

Dr. W. F. Litchfield thought that the manner in which typhoid fever and dysentery had been combated was most remarkable. He asked Dr. Tebbutt whether he had had any experience of the measures employed in the prevention of dysentery, and also what curative treatment had been adopted. In regard to the question of the antiserum treatment of cerebro-spinal meningitis, he recalled the opinions that had been expressed by Professor Welsh and by Dr. Penfold. The latter, basing his remarks on his experience in England, had pointed out that the improvement which had been attributed to serum had been maintained after the serum supply had been exhausted and the cases had been treated by other means.

In his reply, Dr. Tebbutt stated that it had been shown that it was impossible to immunize against amœbic dysentery. Immunization against bacillary dysentery had been practised widely. The Flexner bacillus was well tolerated, but the Shiga bacillus had proved intensely toxic. After much experimentation, it was found that the best results were obtained with large doses of the Flexner organism and small doses of Shiga's. Eusol had been employed to reduce the toxicity. Fairly satisfactory results in curative treatment had been obtained with a polyvalent anti-dysenteric serum. He assumed, in reply to Dr. Litchfield, that Dr. Penfold's remarks were made before Gordon's work had been completed. At the present time, there was very little disagreement concerning the value of anti-meningococcal serum. He referred briefly to Hort's work, and pointed out that Gordon had controlled it and had come to the conclusion that it was not acceptable.

Dr. Oliver Latham submitted some notes on the results of the examination of 8,000 patients in the mental hospitals by the Bordet-Wassermann test (see page 429). The communication was read by Dr. S. Evan Jones.

Dr. H. C. McDouall held that it was of great importance that all patients in mental hospitals should be tested in this manner. Nearly all their patients at Gladesville Hospital for the Insane were tested within a week of admission by Dr. Latham. The results obtained were very reliable. He pointed out that nearly 25% of all the deaths at Gladesville were due to general paralysis of the insane. On the other hand not every general paralytic yielded a positive Bordet-Wassermann reaction. When the reaction was positive it served to confirm the diagnosis. He admitted that treatment had hitherto not made much difference. Salvarsan was useless for these cases. The patients usually came to them in a somewhat advanced stage of the disease. He could not say if the drug might not be more successful if given early. It was extremely useful in other forms of syphilitic lesions of the central nervous system.

Dr. W. F. Litchfield regarded the communication as a very valuable one. He held the opinion that amentia was but rarely caused by syphilis. He had come to this conclusion from the clinical appearances of the condition and from the histories. Dr. Latham had recorded evidence of syphilis in aments varying between 12% and 17%. This indicated that the majority were not syphilitic. Mongolism was not a syphilitic manifestation; hydrocephalus was occasionally a syphilitic manifestation, and microcephally was usually not syphilitic.

In the course of a brief reply, Dr. Evan Jones pointed out that sooner or later the serum of general paralytics yielded a positive Wassermann reaction.

THE CAUSES OF DEATH AND INVALIDITY.

The Final Report of the Federal Departmental Committee on the Causes of Death and Invalidity in the Commonwealth has recently been issued to the public. It comprises summaries of the eight progress reports and some final recommendations of the Committee. It will be remembered that the members of this Committee are Professor Sir Harry Allen, Dr. J. H. L. Cumpston, Director of Quarantine, Dr. A. Jeffreys Wood and Mr. James Matthews, Member of the House of Representatives. The last-named has acted as Chairman.

Infantile Mortality.

Attention is called to the fact that in the year 1915, 9,107 infants died before completing one year of life and, of these, 3,227 died before completing one week of life. In Great Britain nearly as many babies are said to perish before birth as during the first year. The Committee recognize that the first problem to be solved is the prevention of ante-natal death. They state that syphilis is the most frequent cause of ante-natal death. The next most frequent cause is prematurity, but this event is often dependent on inherited syphilis. Industrial employment of mothers and excessive domestic duties are also contributory factors.

They suggest that a remedy for these various ills is to be found in the ante-natal clinic associated with a system of home visiting. The means to combat syphilis are dealt with under a special heading. They advocate in strong terms the breast-feeding of infants, but when this is impracticable they would wish to guarantee a pure supply of cow's milk. A radical reform in the milk trade is urged, including the introduction of municipal control.

In view of the evidence that intestinal diseases in infants are largely dependent on insanitary environment, various improvements in domestic hygiene are insisted upon.

Diphtheria.

The Committee hold the opinion that the number of deaths from diphtheria could be materially reduced if the power of resistance in early life were raised. Syphilis is mentioned as the most common debilitating agent, and the remedy indicated is the universal and thorough treatment of all syphilitic infections. The Committee recognize the importance of systematic search, among persons who have been in contact with those suffering from diphtheria, for carriers of the diphtheria bacillus. For this purpose, laboratory facilities should be provided and preventive measures should be adopted, under the guidance of bacteriological reports. It is suggested that Gordon's method of utilizing disinfectants in the form of fine spray might lead to satisfactory results in rendering bacillus carriers innocuous. In regard to the question of the supply of antitoxin, reference is made to the establishment of the Commonwealth Serum Institute. The adequate supply of antitoxin is thus guaranteed.

Enteric Fever.

The necessity of an efficient water carriage system of sewerage is emphasized in connexion with the prophylaxis of enteric fever. Simultaneously, a sufficient and good water supply is regarded as an essential step. The Committee hold that bacteriological examination should be undertaken in every case before patients, who have suffered from typhoid fever, are discharged from hospital. In addition, careful supervision should be exercised by every health authority.

Tuberculosis.

The Committee call attention to the fact that tuberculosis affects persons of advanced age as well as young adults. They find that there is an early stress affecting men and women between the ages of 15 and 30 years. This stress is more severe in women than in men. The late stress, acting between the ages of 50 and 65 years of age, affects men twice as frequently as women. In regard to the danger of infection from persons who cough up sputum containing tubercle bacilli, they hold that the home is the most common place of infection, and that the factory or office is the second. They conceive that the mortality can be diminished by improving the sanitary conditions in homes and in workrooms, by insisting on proper food and out-door exercise, and by instituting treatment in the earliest stages of the disease. The general prophylactic measures recommended

include the education of persons suffering from "open" consumption, and when reasonable precautions are not taken, the isolation of these people either in their homes or in some institution. The persons living together with patients should be examined systematically at intervals, and an attempt should be made to increase their natural resistance. They advocate the establishment of dispensaries connected with hospitals for the examination and treatment of persons with vague signs and symptoms, of sanatoria for the treatment of persons in the early stages of consumption, of farm colonies and other establishments in which patients, after discharge, may find employment, and thus not be placed in the necessity of having to return to unfavourable surroundings, and of homes or other places for the segregation of persons with dangerous infections.

Risks of Middle Age.

The Committee advise that every individual should take stock of himself in the early forties. The advice of a wise physician at this stage is invaluable. They hold that everything that favours chronic poisoning of the blood with alimentary toxins or with the products of tissue change, must be regarded as a cause of excessive blood tension. The greatest reform would probably lie in a general change of diet. They warn middle-aged persons against the dangers of excess in eating and drinking, and refer to the necessity of removing syphilis as a factor in the production of arterial charges. "The royal road is the simple road, and no other leads to safety."

Venereal Diseases.

The Committee have urged the State authorities to adopt two expedients, aiming at the reduction of venereal infections. These are compulsory notification and abundant opportunities for treatment by registered medical practitioners. Four of the six Australian States have adopted legislation providing for compulsory notification and treatment. One State has pinned its faith to abundant opportunities of treatment without legislation. The Committee would rather sacrifice legislation than abundant opportunities for treatment, but they hold to the necessity for both. To render the introduction easier for the State Governments, the Commonwealth Government has offered to subsidize the State Governments to the extent of £15,000 on a pound for pound basis. This offer has been accepted by four State Governments. The Committee suggest that the task of coping with existing venereal disease as a matter of hygiene should be left to the health departments of the States and to the medical profession, while the Church and educationalists should set themselves to their proper task of prevention, "and this on well-considered lines that will not lead to further mischief."

Maternal Mortality in Childbirth.

The Committee find that the great loss of life of women in childbirth is clearly avoidable. The main necessity, they suggest, is that every woman with child should find facilities for obtaining advice at ante-natal clinics, and that she should be guaranteed attendance in her confinement by a properly trained, properly controlled midwife. The minimum standard for registration should be raised; strong Midwives' Boards should be created, representing the health departments, the medical profession and the registered midwives; there should be supervision of the work of midwives, provision for regular reports by midwives, the appointment of health visitors, and special provision for the needs of rural districts, with Government subsidies, if necessary. The Committee urge that during the ensuing year the granting of the maternity bonus should be conditioned by the return of satisfactory answers to questions devised so as to elicit all the facts contributing to the continuance of the high maternal mortality.

Allocation of Responsibility.

The duty of legislating directly concerning public health rests mainly with the Parliaments of the States. Each State has the duty of maintaining and upholding an effective central health authority. The unit of health administration is the council of each municipality or other authority under the Local Government Acts. The Committee consider that the linking up of these authorities leaves much to be desired at present. A highly qualified permanent head is too often without adequate assistance or adequate powers. They recommend that in each State there should be a definite Minister of Health, and under him a chief executive officer, not only highly qualified, but armed with adequate authority and provided with adequate assistance for central office administration, for general inspection, for health research and for emergency work. Each State should be divided into districts, and each district should be under the supervision of a whole-time medical inspector, appointed by and responsible to the central health authority. Each municipal council should remain in control of its own district and should appoint a medical officer of health. Smaller municipalities might join together with neighbouring municipalities in order that a whole-time medical officer of health could be appointed. The salaries of the health officers should be fixed according to a graduated scale, with an irreducible minimum. The central health authority should have power to order anything to be done or not done by the local health authority, and in default of compliance, to act for itself through the district medical inspector at the expense of the local board. The Committee consider that an organization on these or similar lines is absolutely necessary for progress.

A short sketch is given of the arrangements obtaining in the various States in America, where the Federal authority has gradually relieved the States of many of the more important duties connected with the maintenance of the public health.

Arising out of this consideration and as a final conclusion, the Committee express the opinion that the Government of the Commonwealth has essential interests and duties in regard to public health. In addition to the administration of the *Invalid Pensions Act* and the *Maternity Bonus Act*, and the other functions connected with public health, it has a wide field of potential activity in co-operation with the State Governments. The work of the Commonwealth Government will, it is stated, be to assist State Governments in their efforts to improve the health of the communities, and to extend their operations in this direction. Valuable service could be rendered in an attempt to secure uniformity in the State health laws and in their administration; in the constant collection of sanitary data and in the promotion of health research. An enormous impetus would be given to progress if the Commonwealth Government would offer to contribute to the cost of appointing district medical inspectors throughout Australia. The Committee also offer the suggestion that the Commonwealth Government should invite, at its own expense, an annual conference of the chief health executive officers of the several States with the Director of Quarantine.

THE LODGES IN VICTORIA.

As a sequel to the appointment of Counsel by the Victorian Branch of the British Medical Association to act on their behalf at the Royal Commission appointed to investigate the causes of dispute between the friendly societies and the medical profession, an announcement was made on May 14 that Mr. M. M. Blackburn would act for the friendly societies. The appointment appears to have been made by a committee. Subsequently some of the friendly societies protested that the committee exceeded their rights in making this appointment. On the following day a paragraph appeared in the public press to the effect that Mr. M. M. Blackburn had declined to act for the friendly societies, because he held that the case of the friendly societies would be presented with difficulty by counsel, who had not the fullest assistance and co-operation of his clients. A subsequent announcement has appeared, to the effect that Mr. C. J. Lowe will represent the friendly societies at the Royal Commission.

Correspondence.

IONIC MEDICATION.

Sir,—In your comment upon our letter printed in your issue of the 11th inst., you state that your object in expressing your opinions is to arrive at the truth. This being so, you will, doubtless, be pleased to publish the following:—

Under paragraph (1) you have somewhat cleared the

atmosphere as regards the discrepancies between the published paper and the condensed report which was given in your issue of April 27 last. If Mr. Myers is not thereby to be credited with the several incorrect and contradictory statements attributed to him in your record of the meeting, there is no cause for further "alarm."

Paragraph (2). This requires no further comment.

Paragraph (3). You state that the majority of advocates of ionic medication have used currents of 10 m.a. strength, in practice. If you will kindly supply us with your authorities for that statement, we will be disposed to assist you in dispelling your doubts expressed in the remainder of the paragraph. We have Professor Vonwiller's assurance that the figure of 10 m.a.'s used by him had no specific reference whatever to the current ordinarily required in ionic medication.

Paragraph (4). You have still left unanswered our question as to what "effect is rapid" when a sinuous wound is swabbed out with a dilute solution of sodium chloride. Your subsequent remark that sodium hypochlorite produces certain effects is quite well known to us, but is obviously beside the point.

And as regards your elaboration of the effect obtained within the glass cylinder, which effect was, to you, "particularly unconvincing," we have to point out that neither acid nor alkali is produced under the conditions mentioned by us, and that, therefore, the only result of your criticism is to increase "the gaiety of nations."

For your information, we call your attention to the fact that metallic zinc (not caustic soda) is deposited at the negative electrode with a zinc sulphate solution; so that your suggestion, that the change in appearance, by the addition of the sodium hydrate, "would be just as remarkable as that observed in the cylinder" by us, is hardly caustic enough—the effect on the ulcer, and on the patient, would be more than remarkable.

Paragraph (5). We repeat—our object is also to arrive at the truth; people differ, of course, in the manner of doing so. As to arrive at the truth in these matters, we have been compelled to carefully test every step of our progress, we cannot agree that mere intuitive statements shall be accepted as the scientific truth, even when given out from the unbiassed heights of an editorial chair.

The fact that the results of our experimental work have been successfully applied in a considerable number of difficult medical and dental cases is sufficient evidence to us that our investigations, which have been conducted in a purely academic spirit, have a substantial value, which will in time be appreciated by those who are willing to learn.

Yours, etc.,

61 Hunter Street, Sydney. W. H. MYERS.
16th May, 1918. R. GRANT.

[Messrs. Myers and Grant ask for the authority for the statement that the majority of advocates of ionic medication have used currents of 10 milliampères strength. Leduc advised that a suitable magnitude of current was 2 to 3 milliampères. Lewis Jones taught that "a current of 5 or 8 or 10 milliampères" was advisable. In treating a rodent ulcer in the neighbourhood of the inner canthus of the eye, he employed a current of 1 milliampère for one minute. Many of Lewis Jones's pupils have adhered to his advice in regard to the strength of the current.

Our object in criticising the glass cylinder experiment was to point out that an ion moving across a field cannot exercise a pharmacological action, but that any action which may follow the application of the dissociated electrons must, of necessity, be due to the pharmacological action of chemical molecules. In the case of sodium chloride it would be the sodium hydrate or molecular chlorine or molecular chlorides which would be responsible for any action. Ionization may effect a more rapid concentration of ions in the neighbourhood of the electrode, but it cannot create an ion which does not exist before the current is turned on. We trust that the further investigations of Messrs. Myers and Grant may reveal fresh information which would be of use for therapeutical purposes.]

Sir,—At the combined Society's meeting, held under the auspices of the B.M.A., when ionic medication was the subject under discussion, I was reported in your journal as having stated that I cured *pyorrhoea alveolaris* with this treatment.

What I said was I had found ionic medication a valuable aid in the treament of this disease, but that surgery must always be considered the all important matter. Trusting you will be kind enough to correct the error in your journal.

Yours, etc.,

R. MORSE WITHYCOMBE.

Wyoming, 175 Macquarie Street, Sydney.
May 14, 1918.

THE LATE DR. FRANCIS.

Sir,—I read with appreciation the notice of the death of Dr. T. W. Francis, and would like to point out a slight inaccuracy in reference to his movements at the start of the war.

Dr. Francis left his practice at a couple of days' notice early in August, 1914, and went to sea as surgeon of H.M.A.S. *Encounter*, which took part in the capture of Rabaul, etc. As far as I recollect, he served for about seven months on this ship, and then on his return went to Cockatoo Island. I feel sure that all who knew Dr. Francis will endorse what you so well said of him—in your last issue.

Yours, etc.,

North Sydney, May 20, 1918. JOHN MacMASTER.

THE ACTION OF THE BICEPS.

Sir,—Dr. W. Colin MacKenzie, in his article "Applied Comparative Anatomy," says: "The statement that the biceps is not a flexor, but only a supinator, will come as a surprise. Nevertheless, this is so. The biceps, as a supinator, must be relaxed and elongated in the position of over pronation. Yet with the hand over pronated, we can readily flex the elbow."

Surely the first part of this statement must be wrong. One would think, on the principle of the mechanics of levers, it would be a physical impossibility for the biceps to shorten to any marked extent without causing flexion.

Certainly, in the position of over pronation, with the elbow in a straight, or nearly straight, position, the biceps is relaxed, and moderate flexion is then done by the *brachialis anticus*, the flexing power of the biceps being mainly in abeyance in the interest of pronation; but in extreme forcible flexion, even with the hand in this position of over pronation (as in raising a bag, chest-high, with the back of the hand upwards), if the biceps be held between the fingers of the other hand, it can be felt to harden and contract—more so still, of course, in a position of over supination, in which both its functions are combined.

Yours, etc.,

193 Macquarie Street, Sydney. ERIC POCKLEY.
14th May, 1918.

Proceedings of the Australian Medical Boards.

VICTORIA.

The following have been registered, under the provisions of *Part I of the Medical Act, 1915*, as duly qualified practitioners:—

Harry Garnet Phippen, Quambatook, M.R.C.S., Eng.; L.R.C.P. Lon., 1906.

James Joseph O'Dwyer, 161 Nott Street, Port Melbourne, L.R.C.S. 1879; L. *et* L. Mid K. and Q. C.P. 1880; L. Mid. R.C.S. Irel. 1880.

Norman Arthur Albiston, Oxley Road, Auburn, M.B. *et* Ch.B., Melbourne, 1918.

Thomson Leckie, 3 Station Street, Ivanhoe, M.B. *et* Ch.B., Melbourne, 1918.

Vincent Michael O'Grady, 422 Brunswick Street, Fitzroy, M.B. *et* Ch.B., Melbourne, 1918.

Horace Stanley Waters, "Ronaldshay," Ocean Street, Hampton, M.B. *et* Ch.B., Melbourne, 1918.

Thomas Gillis Wynne, Colac, M.B. *et* Ch.B., Melbourne, 1918.

Victor Hugo Wallace, Wonwondale East, *viâ* Horsham, M.B. *et* Ch.B., Melbourne, 1918.

The following names of deceased practitioners have been removed from the Register.

Robert Byron Duncan.

James Patrick Ryan.

Wade Shenton Garnett.

QUEENSLAND.

The following have been registered, under the provision of the *Medical Act of 1867*, as duly qualified medical practitioners:—

Davies, Thomas, Emerald, L.R.C.P. and S. Edin., L.F.P.S. and L.M. Glasg. 1890, F.R.C.S. Edin., 1900.

Mansfield, Edward, Brisbane, M.B., Ch.B. Univ. Edin., 1914.

Roper, Arthur Cecil, Brisbane Hospital, M.B., Univ. Syd., 1918.

Medical Appointments.

During the temporary absence on leave of Dr. Bedlington Howel Morris (B.M.A.), Dr. E. A. Johnson has been appointed Deputy Inspector-General of Hospitals, South Australia.

Dr. Helen Mary Mayo (B.M.A.) has been appointed an Official Visitor, under the provisions of the *Mental Defectives Act, 1913*, to the Mental Hospital, Parkside, South Australia.

The appointment of Dr. F. A. Wood (B.M.A.) as Officer of Health for the Shire of Woorayl has been approved by the Board of Health, Victoria.

The resignation of Dr. A. E. J. Scott as Medical Officer in the Lunacy Department, New South Wales, is announced in the *New South Wales Government Gazette* of May 17.

Dr. F. S. Thomas (B.M.A.) has been appointed Government Medical Officer at Maryborough, Queensland, and a Health Officer for the purposes of *The Health Acts, 1900 to 1917*.

Medical Appointments Vacant, etc.

For announcements of medical appointments vacant, assistants, locum tenentes sought, etc., see "Advertiser," page xix.

Royal Alexandra Hospital for Children, Camperdown, Resident Medical Officer and temporary Honorary Relieving Medical Officer.

Queenstown Hospital Union, West Coast, Tasmania, Medical Officers (2).

Medical Appointments.

IMPORTANT NOTICE.

Medical practitioners are requested not to apply for any appointment referred to in the following table, without having first communicated with the Honorary Secretary of the Branch named in the first column, or with the Medical Secretary of the British Medical Association, 429 Strand, London, W.C.

Branch.	APPOINTMENTS.
VICTORIA. (Hon. Sec., Medical Society Hall, East Melbourne.)	All Friendly Society Lodges, Institutes, Medical Dispensaries and other contract practice. Australian Prudential Association Proprietary, Limited. National Provident Association. Life Insurance Company of Australia, Limited. Mutual National Provident Club.
QUEENSLAND. (Hon. Sec., B.M.A. Building, Adelaide Street, Brisbane.)	Brisbane United Friendly Society Institute. Townsville Friendly Societies' Medical Union.
SOUTH AUSTRALIA. (Hon. Sec., 3 North Terrace, Adelaide.)	The F.S. Medical Assoc., Incorp., Adelaide. Contract Practice, Appointments at Renmark.
WESTERN AUSTRALIA. (Hon. Sec., Health Department, Perth.)	All Contract Practice Appointments in Western Australia.
NEW SOUTH WALES. (Hon. Sec., 30-34 Elizabeth Street, Sydney.)	Australian Natives' Association. Balmain United F.S. Dispensary. Canterbury United F.S. Dispensary. Leichhardt and Petersham Dispensary. M.U. Oddfellows' Med. Inst., Elizabeth Street, Sydney. Marrickville United F.S. Dispensary. N.S.W. Ambulance and Transport Brigade. North Sydney United F.S. People's Prudential Benefit Society. Phœnix Mutual Provident Society. F.S. Lodges at Casino. F.S. Lodges at Lithgow. F.S. Lodges at Parramatta, Auburn and Lidcombe. Newcastle Collieries — Killingworth, Seaham Nos. 1 and 2, West Wallsend.
TASMANIA. (Hon. Sec., Macquarie Street, Hobart.)	Medical Officers in all State-aided Hospitals in Tasmania.
NEW ZEALAND: WELLINGTON DIVISION. (Hon. Sec., Wellington.)	Friendly Society Lodges, Wellington, N.Z.

Diary for the Month.

May 28.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.
May 30.—S. Aust. Branch, B.M.A.
May 30.—Vic. Branch, B.M.A., Council.
May 31.—N.S.W. Branch, B.M.A.
June 5.—Vic. Branch, B.M.A.
June 7.—Q Branch, B.M.A.
June 11.—Tas. Branch, B.M.A., Council and Branch.
June 11.—N.S.W. Branch, B.M.A., Ethics Committee.
June 13.—Vic. Branch, B.M.A., Council.
June 14.—N.S.W. Branch, B.M.A., Clinical.
June 14.—S. Aust. Branch, B.M.A., Council.
June 18.—N.S.W. Branch, B.M.A., Executive and Finance Committee.
June 19.—W. Aust. Branch, B.M.A.
June 19.—S. Sydney Med. Assoc. (N.S.W.).
June 21.—Q. Branch B.M.A., Council.
June 25.—N.S.W. Branch, B.M.A., Medical Politics Committee; Organization and Science Committee.

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